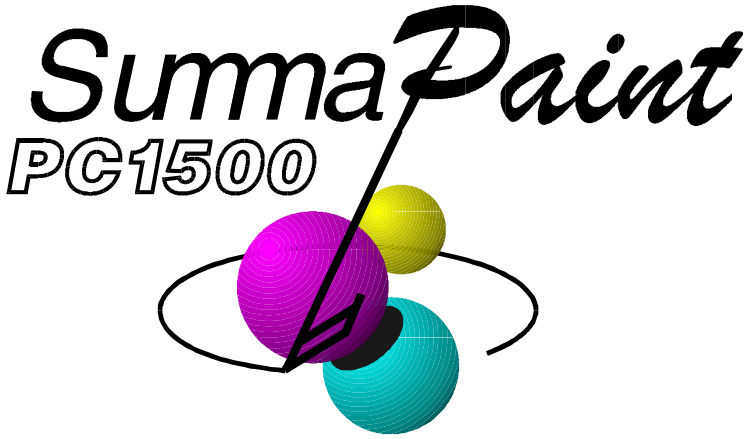
USER'S MANUAL FOR THE



IMPORTANT

Before you begin...

Please complete the attached Warranty Registration Card and return it to CalComp today. (Users outside Europe, Africa and the Middle East should check the address on the back of the Warranty Registration Card.)

Failure to return the duly completed Warranty Registration Card might delay response to your warranty and service enquiries.

Summagraphics is a brand name of CalComp.

NOTE

When selecting software drivers: If the CalComp name is not mentioned in the list of available software drivers, use Summagraphics drivers.

Manual Number **: MI9938 rev 001 English 08/97**

FCC NOTICE

The SummaPaint PC1500 has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. These cutters generate, use, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this Printer cutter in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Caution !

Changes or modifications, not expressly approved by CalComp, who is responsible for FCC compliance, could void the users authority to operate this equipment.

DOC NOTICE

The SummaPaint PC1500 does not exceed the Class A limits for radio noise for digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

VCCI-1 (CLASS 1) NOTICE

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SECTION 1

GENERAL INFORMATION

INTRODUCTION

The SummaPaint PC1500 has been designed to produce computer-generated graphic designs on cut sheet or roll media.

This manual is a reference guide for installing and operating the SummaPaint PC1500. This unit has a full-color inkjet print head indicated by the "P" and a tangential cutting head indicated by the 'C' in the product designation.

PRODUCT FEATURES

The following are the main features of the SummaPaint PC1500:

- Full-colour inkjet print head
- Fast tangential cutting head
- Variable media widths up to 1420 mm
- Interchangeable drag knife
- Interchangeable ball-point for producing preview plots of sign designs on paper
- 12-key control panel
- Convenient operator control via a 2-line 16-character liquid crystal display
- Metric or English units
- Menu mode for selection of the printer/cutter's power-up operating configuration
- Up to four separate user configurations stored in non-volatile memory
- Media support system for automatic loading of media with optional "shuffling" to guarantee tracking of longer signs
- Automatic media pull from roll
- Media sensing
- Pick-up roll for continuous printing

- Big Ink Supply system for continuous working
- Simple origin adjustment to any location
- Draft en Enhanced print mode
- Uni- and bi-directional print mode
- Prime and cartridge alignment test
- Adjustable knife pressure (and offset settings) controlled by microprocessor
- Wide variety of cutting speeds
- Knife depth and offset test
- Print and Cut test
- Extensive internal test routines
- Concatenation and curve smoothing to obtain better cut quality
- Overcut for easy weeding.
- Communication with host computer via standard serial RS-232-C or Centronics parallel interface
- User-addressable resolution : 0.1 mm, 0.025 mm,0.001mm, 0.001" or 0.005"
- User-selectable DM/PL™, HP-GL™ and HP-GL/2™ cutting languages
- Handles the universal HP RTL print language
- Basket (optional)
- Possibility to change quickly between two sets of inks (optional)

SummaPaint PC1500 user MANUAL

This user manual provides the following information :

- Full technical specifications for the SummaPaint PC1500 and the media to be handled
- A complete description of the SummaPaint PC1500 main components
- Step-by-step instructions for cartridge, knife and ball-point installation and media loading
- Instructions for online and local mode (✋) operations
- Instructions for USER CONFIGURATION, INTERNAL TESTS and PRINTER SETTINGS operations
- Maintenance and cleaning instructions

- Information about the RS-232-C and Centronics interface cables used to inter-connect the cutter and IBM, IBM-compatible, Apple and Apple-compatible host computer.

SPECIFICATIONS

PC1500

	SummaPaint PC1500	
Height	1120 mm	44,1 inch
Width	2450 mm	96,3 inch
Depth	740 mm	29,1 inch
Weight	80 kg	176 lb.

TABLE 1-1 :
SUMMAPAINT PC1500 SPECIFICATIONS

MEDIA

	SummaPaint PC1500	
	mm	inch
Width	70 to 1420	3 to 56
Tracking Performance	- 8 m/26 feet max. within guaranteed specifications * for media narrower than 750 mm (30") - 4 m/13 feet max. within guaranteed specifications** for media wider than 750 mm (30").	
Thickness	0.05 to 1.2	0.002 to 0.050
Max. Printing/ Cutting width	1372 mm	54,0 inch
Min. Margin* **	25 mm	1,0 inch
Front Margin	25 mm	1,0 inch
Rear Margin Sensor on Sensor off	 85 mm 65 mm	 3,3 inch 2,6 inch

* Media lengths greater than 8 m (26 feet) can be handled, but compliance with specifications is not guaranteed (will be dependent on media type, media size and other parameters).
** Media lengths greater than 4 m (13 feet) can be handled, but compliance with specifications is not guaranteed (will be dependent on media type, media size and other parameters).
*** for positioning of the pinch rollers (see section 1.8.)

TABLE 1-2 :
SUMMAPAINT PC1500 MEDIA SPECIFICATIONS

Media Types

A wide range of media types has been evaluated and tested on the SummaPaint PC1500. When using duly certified media, operation in accordance with the functional specifications of the model is warranted. Other media should be certified by CalComp before use to ensure performance in compliance with specifications.
For a full list of all duly certified media suitable for friction drive operation, see Appendix A.

TOOLS

The SummaPaint PC1500 is supplied with 500 ml ink of each color, 4 cartridges, two standard knives (for vinyl media), one drag knife and one ballpoint pen and some maintenance tools.

Tool	*Color*	*Quantity supplied*
Cartridge		
SummaPaint ink cartridge with special connections to the big ink supply system.	Yellow, Cyan, Magenta, Black, Neutral	One of each.
Ink		
SummaPaint ink.	Yellow, Cyan, Magenta, Black	500 ml of each color
Pen		
Ballpoint pen (requires a ballpoint pen holder)	black	1 off (1 off)
Tool	*Media*	*Quantity supplied*
Tangential Knife		
Standard knife (requires a standard knife holder along with a standard **grey** nose piece)	standard, reflective & fluorescent vinyl types	2 off (1 off)
Double tip knife for high-density reflective materials (requires a standard knife holder)	high-density reflective vinyl types	optional
Knife for masking stencils (requires a standard knife holder along with **black** nose piece)	masking stencils & thick materials	optional (optional)
Drag Knife		
Standard drag knife (requires a drag knife holder)	standard, reflective & fluorescent vinyl types	1 off (1 off)
Tool	usage	
syringe	Filling and cleaning	
cleaning tool	Cleaning out tube system	
Evacuating tool	Deblocking nozzles of cartridges	

TABLE 1-3 :
SUMMAPAINT PC1500 TOOLS

To order ink kits, replacement knives and/or pens, contact your local dealer, quoting the part numbers listed in table 1-9. The SummaPaint PC1500 will only perform according to specifications if the CalComp genuine tools are installed. Do not replace the tools with products from other manufacturers.

INTERFACE

Communication	standard asynchronous RS-232-C and Centronics half pitch parallel interface
Serial : I/O Port connector	DB-9P
Mating connector	DB-9S
Byte format	8 data bits, 2 stop bits, no parity
Baud rate	38400, 19200, 9600, 4800, 2400 bps
Parallel : I/O Port connector	Centronics half pitch female
Mating connector	Centronics half pitch male

TABLE 1-4 :
SUMMAPAINT PC1500 INTERFACE SPECIFICATIONS

FIRMWARE

Printing Language	RTL-subset
Cutting Language	HP-GL (758x emulation), HP-GL/2, DM/PL
Supported character sets	Standard ASCII
Supported fonts for cutting	Sans serif (single stroke & medium)
ROM-based plots	Prime plot, Color alignment plot, print and cut plot, Confidence cut, DIN cut

TABLE 1-5 :
SUMMAPAINT PC1500 FIRMWARE

Performance

Printing & Cutting specifications on 0.05 mm (0.002") wax-backed vinyl, total media thickness not greater than 0.25 mm (0.010")

Printing Modes	Enhanced or Draft Uni- or Bi-directional	
Printing speed		
Draft (full size)	Bi-directional Uni-directional	100 cm / hour 85 cm / hour
Enhanced (full size)	Bi-directional Uni-directional	75 cm / hour 65 cm / hour
Printing resolution	300 dpi	
Cutting speed		
Axial Cutting speed	50 to 600 mm/s	2 to 24 ips
Default speed	500 mm/s	20 ips
Acceleration	1.5 G	
Addressable cutting resolution	0.025 mm, 0.1 mm	0.001", 0.005"
Default cutting resolution	0.025 mm	0.001"
Mechanical resolution	0.0127 mm	0.0005"
Accuracy	0.2% of move or 0.25 mm, whichever is greater*	0.2% of move or 0.010", whichever is greater*
Knife pressure	0 to 600 gr.	
Pen pressure	0 to 600 gr.	

*Excludes differences due to media expansion, stretching, etc.

TABLE 1-6 :
SUMMAPAINT PC1500 PERFORMANCES

Certifications

CE Certificate
FCC Class A
EN 50022 : 1994
EN 50082-2 : 1995
IEC 950, EN 60950
UL 1950
CSA 950

ENVIRONMENTAL

(cutter without media)

Operating Temperature	15 to 35° C	59 to 95° F
Storage temperature	-30 to 70° C	-22 to 158° F
Relative humidity	35 - 85 %, non condensing	

TABLE 1-7 :
SUMMAPAINT PC1500 ENVIRONMENTAL SPECIFICATIONS

IMPORTANT HINT

The use of dimensionally stable media is an essential pre-requisite to obtain high cut quality. Additionally, media expansion or contraction may occur as a result of temperature variations or humidity changes.
To improve the dimensional stability of media, let it stabilise to the current environmental conditions before usage, for a minimum period of 24 hours.

Electrical

Mains Supply : 48-62 Hz, single phase.

Nominal line	Min./Max. line	SummaPaint PC1500 Fuse	CalComp order number
100/120 V AC	89 - 130 V AC	T 4A, 250V, 5x20mm	MF9004
220/240 V AC	197 - 260 V AC	T2A, 250V, 5x20mm	MF9003

TABLE 1-8 :
SUMMAPAINT PC1500 ELECTRICAL SPECIFICATIONS

CAUTION

Replace the fuse only with the fuse type specified by CalComp.

CUTTER ACCESSORIES AND CONSUMABLES

The following is an overview of the accessories and consumables available for the SummaPaint PC1500:

Options/ Accessories/ Consumables	SummaPaint PC1500
Quick Start	MI9939
User's Manual	MI9938
Printer cable	404-923
Power Supply Cablesmarket specific**Serial Interface Kit, consisting of :** - 9 pin to 9 pin cable - 9 pin to 25 pin conv.	
- 9 pin to 8 pin DIN conv423-155**Extra 4 Ink supply bottles**	400-590
Basket	400-596
SummaPaint Color Kit Kit with 500 ml of ink and a empty ink-cartridge	Yellow : 400-611 Magenta : 400-612 Cyan : 400-613 Black : 400-614
Cleaning tool	400-557
syringe	MH9022
Evacuating tool	400-279
Double tip knife	390-551
Ballpoint pen	391-669
Holder for drag knife	391-668
Drag knife (set of 5)	391-360
2 Flanges for media roll ∅ 3 inch	391-510
2 Flanges for media roll ∅ 2 inch	400-561
Manual cut-off razor blades (set of 10)	391-146
Razor blade & holder	391-295
Media : **CalComp has a wide range of material that guarantees high quality images on paper, vinyl, canvas, clear film, backlite,… . CalComp also has laminate to protect your drawings and use them outdoor.**	

TABLE 1-9
SUMMAPAINT PC1500 ACCESSORIES AND CONSUMABLES.

REAR PANEL COMPONENTS

In order to get acquainted with your SummaPaint PC1500, read the following description of the rear panel components. Figure 1 - 1 shows the location of the main components.

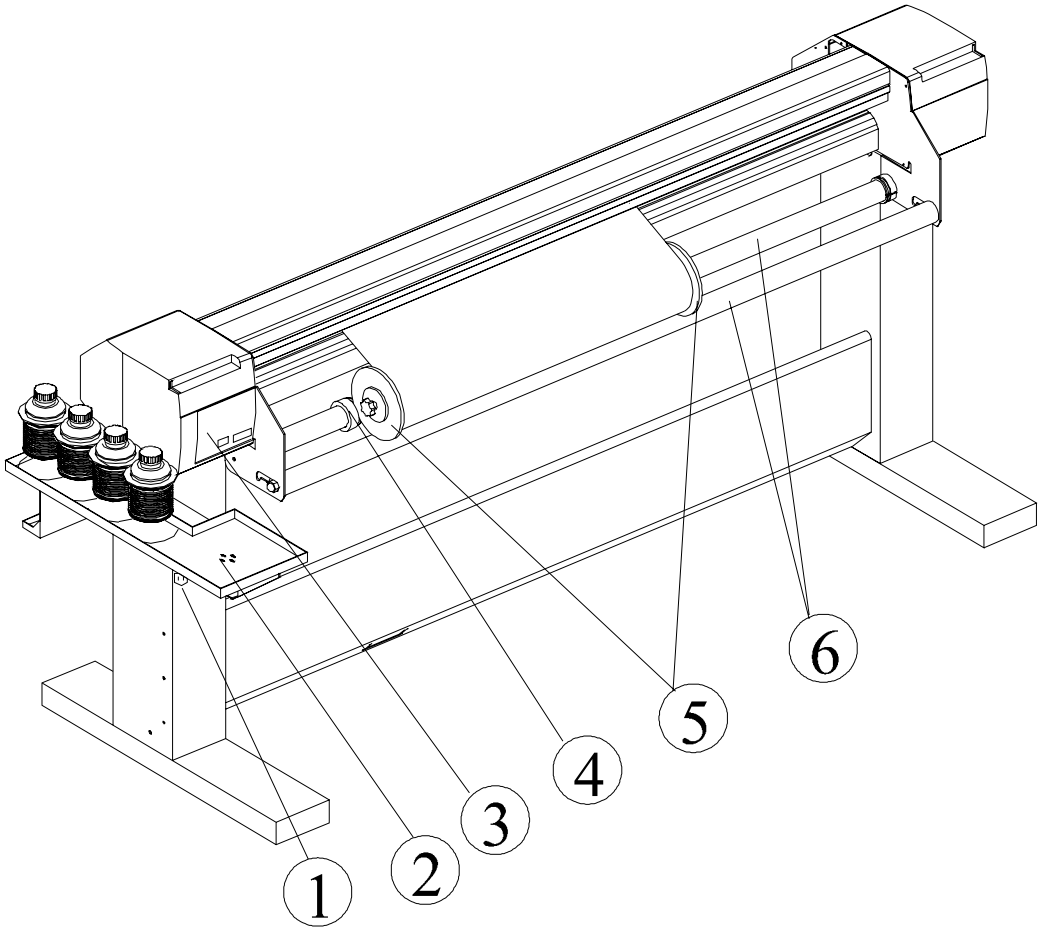


FIGURE 1 - 1
SUMMAPAINT PC1500, REAR VIEW

1. ***Power Entry Module****:* - The fuse box and the AC power cord receptacle are located in the power entry module.

The power-up procedure is explained in detail in Section 1.6.

For information on the conversion of the operating voltage, see Section 3.2.

2. ***Big ink supply system :*** - The SummaPaint can be upgraded with a second set of ink.

3. ***Controller*** *:* - For details see further.

4. ***Roll Media Guide Bushes :*** - The two guide bushes serve to keep the media roll in place when media is pulled from the roll.

5. ***Media Flanges :*** - The media flanges ensure proper routing of the media roll.

6. ***Media Support Roller :*** - Rotating support rollers for the media roll.

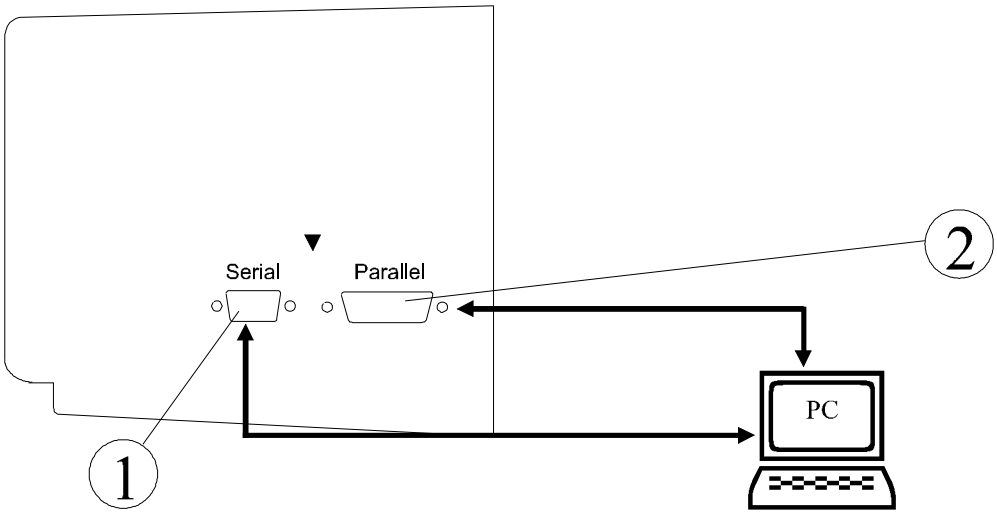


FIGURE 1 - 2
SUMMAPAINT PC1500, CONTROLLER

1. ***RS-232-C Port* :*** - This DB-9P connector provides the communication link between the cutter and a host computer. It allows bi-directional communication between the host computer and the cutter. This port can only receive cut data.

2. ***Parallel Port* :*** - This printer port provides a unidirectional communication link between the PC1500 and a host computer. The PC1500 can receive print and cut data, but not transmit data via this port.

* *Note : only one interface can be active at a time.*
The first port receiving data will be the active interface until the cutter is reset.

FRONT PANEL CONTROLS

In order to get acquainted with your SummaPaint PC1500, read the following description of the front panel controls and components. Figure 1 - 3 shows the location of the main components.

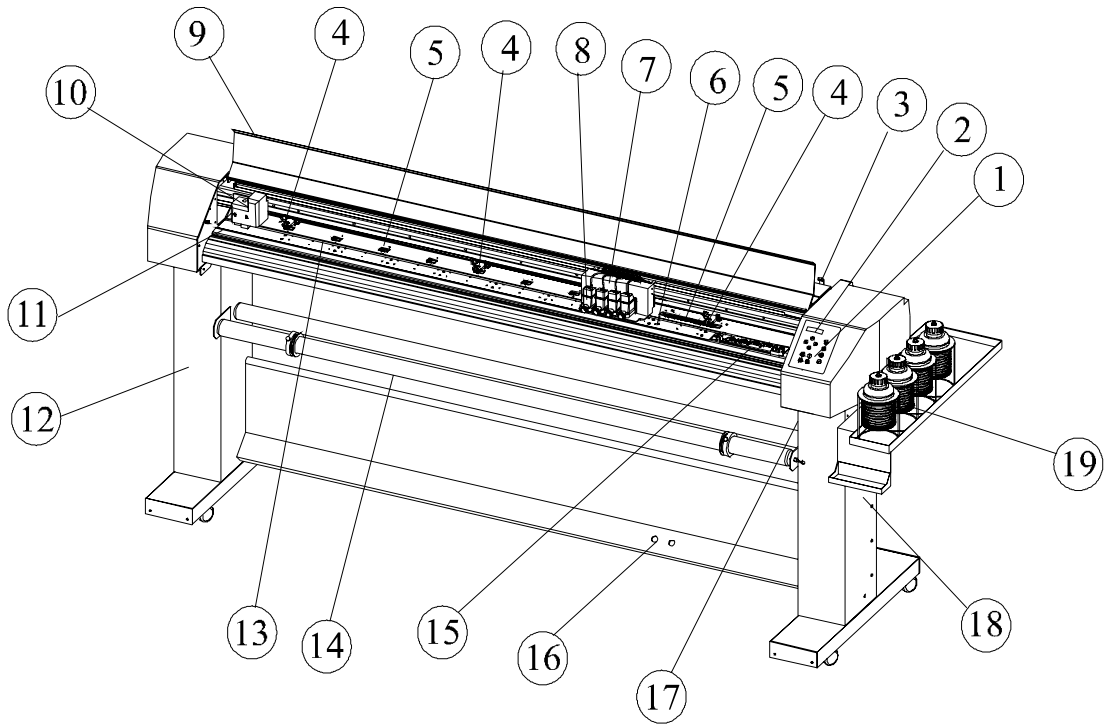


FIGURE 1 - 3
SUMMAPAINT PC1500S, FRONT VIEW

1. ***Control Panel :*** - The control panel has 12 keys. All machine activity can be initiated from the control panel. This includes initiating remote mode for computer control, local mode for manual operation and menu mode. Each control panel function is explained in Section 2.2.

2. ***Display :*** - The 2x16 character display informs the user about the current status of the cutting process or about actions that need to be taken.

3. ***Pinch roller lever arm :*** - This lever is used to raise and lower the pinch rollers (Media loading is discussed in Section 1.8).

4. ***Pinch rollers :*** - The pinch rollers (one at each side) hold the media clamped between the rubber rollers and the media drive sleeves. The PC1500 unit is provided with an extra low pressure roller in the middle to keep the media flat.

5. ***Media Drive Sleeves*** : - The media drive sleeves move the media only when the pinch rollers are in the 'down' position. The following table lists the number of media drive sleeves installed on the SummaPaint PC1500

Number of media drive sleeves	SummaPaint PC1500
Short sleeve	8
Long sleeve	1

6. ***Sensors :*** - The sensors detect the presence of media to avoid damage to the cutting strip. Upon powering up the machine, they cause the media to move all the way to the front edge of the platen.

7. ***Inkjet Carriage*** : - The inkjet carriage is the mount for the inkjet head.

8. ***Ink Cartridge*** : - An ink cartridge is a small reservoir of ink on which a print head is mounted. (For the installation of the cartridge see further.)

9. ***Safety Cover*** : - The safety cover prevents the human body from being hit by the moving carriage. Therefore it is advised to close the cover while the unit is working. This cover also prevents dust from falling on the newly printed drawing.

10. ***Cutting Carriage :*** - *The cutter carriage is the mount for the tangential cutting head.*

11. ***Manual cut-off knife :*** - Upon completing a sign, move the media forward by pressing the key. Use the manual knife to cut the finished sign off the media roll. Leave the loaded media in place ready to start your next cut by pressing the key again.

12. ***Stand :*** - The stand comes standard with the SummaPaint PC1500.

13. ***Cutting strip :*** - Soft strip to avoid damage to the knife tip when no media has been loaded. Since cutting is done on the cutting strip it is essential that the cutting strip remains intact.

14. ***Pick-up roll*** : - The pick-up roll makes it possible to roll up the printed material. This way the PC1500 can print unattendedly without damaging a drawing.

15. ***Service station*** : The service station cleans the printing head and prevents the head from drying out when the unit is not working. The service station needs to be cleaned regularly.

16. ***Pick-up sensor*** : - This sensor senses the vinyl. When the vinyl reaches too close to the ground the pick-up roll will be activated. This way, it prevents the pictures from touching the ground.

17. ***Power ON/OFF switch*** : - This rocker switch sets the unit's power to ON or OFF. To switch the power ON, press the "I" side of the rocker switch. To switch the power OFF, press the "O" side of the rocker switch.

18. ***Cartridge compartment*** : - When a cartridge is not being used, it is advised to place it in a cartridge clamp. These clamps can be placed in the cartridge compartment.

19. ***Big ink supply bottles*** : - The big ink supply bottles can handle 500 ml. ink of each colour. The big ink supply system enables long unattended printing without refilling the ink.

POWERING UP THE CUTTER

GROUNDING

SAFETY WARNING

An insulated earth conductor must be installed as part of the branch circuit which supplies power to the wall outlet to which the cutter is connected. The ground conductor must have the same size, insulation material and thickness as the grounded and ungrounded branch-circuit supply conductors, but the insulating sheath should be green, or green with yellow striping.

The ground conductor described above must be grounded at the electrical distribution board, or, if power is supplied by a separate system, at the power supply transformer motor / generator set.

The wall sockets into which the cutter is plugged must be of the grounded type. The earth conductors serving said wall sockets must be properly connected to earth.

CAUTION

Before plugging in the cutter's power cord to a power source, make sure the unit has the right fuse installed in the power inlet module. (T4A for 100 /120V or T2A for 220 / 240 VAC) (see section 3).

See Table 1-8 for the minimum and maximum operating voltage for the different voltage ratings.

For information on the exact fuse ratings, see Section 3.

Plug the power cable in the inlet at the rear of the stand (right hand leg), and plug the other end of the power cable into a properly grounded electrical outlet of the correct voltage.

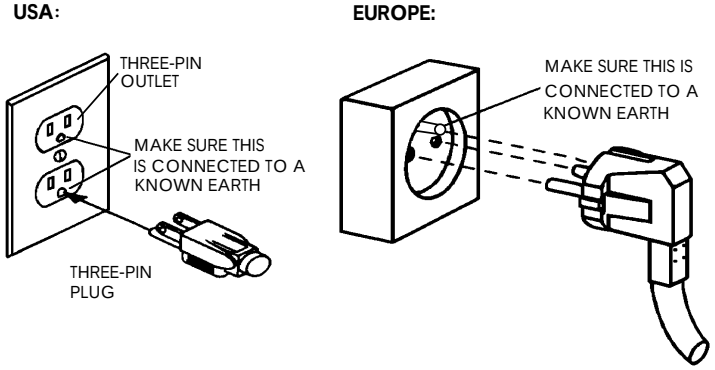

USA:
EUROPE:
THREE-PIN OUTLET
MAKE SURE THIS IS CONNECTED TO A KNOWN EARTH
THREE-PIN PLUG
MAKE SURE THIS IS CONNECTED TO A KNOWN EARTH

FIGURE 1 - 4
EARTH CONNECTION

IMPORTANT OPERATIONAL TIP

Your SummaPaint PC1500 must only be used with a power outlet that is properly grounded to earth. Use of an unearthed outlet exposes the operator to risk of electric shock and will also lead to malfunctioning of the cutter.

Connecting the computer cables

1. Plug one end of the long serial cable into the unit (at the rear of the right hand cover) and screw the two long screws tight.

2. Plug the other end of the serial cable into a serial port of the computer (two extra adapters are available for different port types on the computer side) and screw the screws tight.

3. Plug one end of the parallel cable into the unit (at the rear of the right hand cover) where the subscription 'PARALLEL' is written. A special clip system prevents the cable from loosening.

4. Plug the other end of the parallel cable into the parallel port of the computer and screw the screws tight.

POWER-UP PROCEDURE

SAFE OPERATION

Do not place any objects in front of, or behind, the unit that could interfere with the operation of the unit. Make sure the media is free to move back and forth. Keep hands, hair, clothing and jewellery away from moving parts.

➔ To power up the your SummaPaint PC1500, proceed as follows:

1. Make sure the unit is either placed on a flat, level and sturdy surface or securely attached to its stand.

2. Switch on the switch on the left side of the right hand leg.

3. Follow the instructions on the LCD (only by first time set up).
   - Use the and jogging keys to select the desired language, and press the ✔ key to confirm your selection.
   - Select the menu units by means of the **1** and **2** keys.

4. The message "INSERT MEDIA" is displayed on the LCD when no media is loaded and the pinch rollers are in the up position.

LOADING MEDIA

The following procedures are mainly written for using roll media . When using sheets there are two possibilities. Firstly, when using long sheets, roll the sheet up so that the alignment is identical to that of a roll. Secondly, when using short sheets, alignment is not so important. If the sheet is cut off perpendicularly, it can be aligned to the front border.

Positioning the Pinch Rollers

When working with cut sheet or roll media, the traction resulting from the contact between the pinch rollers and the drive sleeves moves the media in the X axis (forward/backward).

Proper movement of the media will only occur if the media is driven by the pinch rollers correctly located over two drive sleeves.

The pinch rollers are lowered or raised simultaneously by means of the pinch roller lever arm located on the right hand side of the cutter, next to the control panel. The rollers must be lifted to facilitate vinyl loading when the media is fed from the rear of the cutter to the front.

When in the up position, the pinch rollers can be moved manually to the left or the right along the pinch roller shaft, so that they can be easily positioned in a detent (click position) where they are to be lowered to ensure optimum traction on the media.

When the pinch rollers are in the up position, the message "LOWER CAM ROLLERS" is displayed on the LCD.

CAUTION

Always make sure that the pinch rollers are fully raised before sliding them to the left or right.

The pinch rollers MUST be positioned correctly and lowered onto the media before an automatic load sequence is initiated. Make sure that the two pinch rollers are positioned above the drive sleeves. The left pinch roller should be positioned in a detent (click position). The right pinch roller should be positioned somewhere on the long drive sleeve that only has a click position at the beginning and at the end of the sleeve. The drive drum will move the media only when the pinch rollers are lowered onto the sleeves.
Before lowering the pinch rollers, carefully check the position of the rollers in relation to the drive sleeves. When the pinch rollers are DOWN, the two rollers must run over the sleeves in order to ensure proper media traction. It is very important that both media edges always rest on the sleeves in such a way that the two pinch rollers, which are positioned 3 to 15 mm (0.1" to 0.6") from the media edge, will run over the sleeves when lowered to the drive drum.
Two, three or more sleeves may be partly or fully covered, depending on the media width used.
The central low-pressure roller is used to enhance media routing and keep the vinyl flat. Ideally, this roller should be positioned *halfway* between the two edge rollers and above one of the drive sleeves.
For media widths smaller than 600 mm, *the central low-pressure roller can be positioned in the UP position to disable it.*
For printing purposes the central low-pressure roller should also be placed in the up position, so that no track is made on the material.

feeding and positioning media

The loading procedure described below has been found to give excellent repeatability. When loading media, adhere to these step-by-step instructions strictly.

➔ To load media, proceed as follows:

1. Raise the pinch rollers by means of the pinch roller lever arm located on the right-hand side of the cutter, next to the control panel.

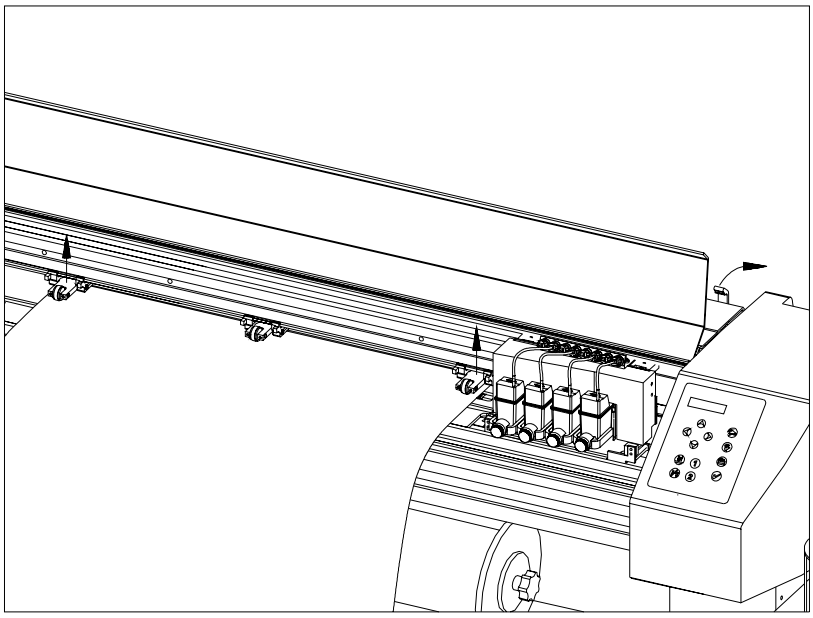


FIGURE 1 - 5
MEDIA POSITIONING

2. When working with roll media proceed by inserting a media flange at each end of the media roll and tighten the thumbscrew until the media roll is firmly gripped between the flanges. Make sure the flanges are firmly pressed against the roll. Place the roll of media on the media support rollers at the rear of the machine.

3. Position the media roll with flanges on the support rollers at the rear of the machine.
   Slide the two roll media guide bushes under the media roll so that the roll flanges run into the groove provided in the guide bushes. In this position the media roll and guide bushes can be shifted from the left to the right.
   Start feeding the media from the rear of the machine.
   Position the *left media edge* on the *left-most drive sleeve* and check whether the *right media edge* is positioned over the *long drive sleeve*. If so, the *left pinch roller* can be positioned in *a click position* over the *left-most* sleeve and the *right pinch roller* is positioned *somewhere* over the *long drive sleeve* to suit the media width. The pinch roller can be lowered anywhere between the two click positions of the long drive sleeve to allow for flexibility in holding any media width.

In circumstances where the above does not work, because your media is too narrow to reach the long drive sleeve, try positioning the left media edge over the second left drive sleeve and position the right media edge somewhere on the long drive sleeve. Repeat this process if the media is found still to be too narrow, locating the left media edge on the third sleeve from the left and adjusting the right hand position as previously described.
In all cases, both edges of the media have to run over a drive sleeve. If this is not the case, reposition the roll of material to comply with the above.

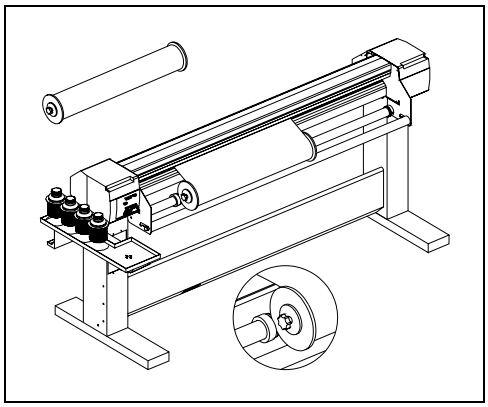


FIGURE 1 - 6
FEEDING ROLL MEDIA USING MEDIA FLANGES

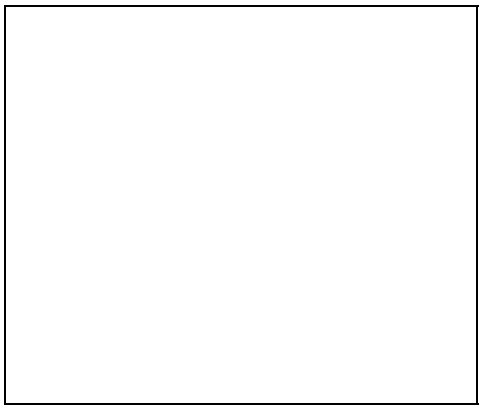


FIGURE 1 - 7
FEEDING ROLL MEDIA WITHOUT USING MEDIA FLANGES

4. Make sure that the media follows a straight path from the roll of material. To accomplish this, you can slide the media roll and guide bushes from the left to the right along the media support rollers.

5. The pinch rollers should be positioned over the drive sleeves about 3 to 15 mm (0.1" to 0.6") away from the media's outer edges.

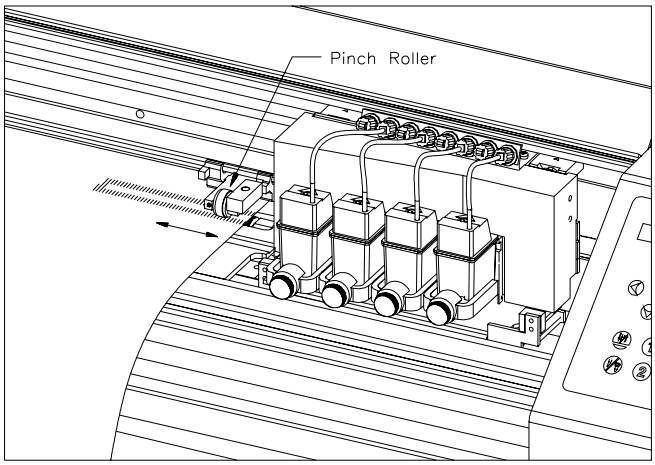


FIGURE 1 - 8
PINCH ROLLER POSITIONING

For wide media, slide the central low-pressure roller into position. Ideally, it should be half-way between the two edge rollers and above a drive sleeve. Do not use the central low-pressure roller when printing on vinyl or on paper, as this roller can leave a track or mark on the material.
If the central low-pressure roller does not run over one of the drive sleeves, you may have to turn the knob on the back of the low-pressure roller to disable this roller.

6. Lower the pinch roller lever to press the media firmly against the drive sleeves. After one second the tool carriage automatically moves from the right to the left to sense the media width that can be used.

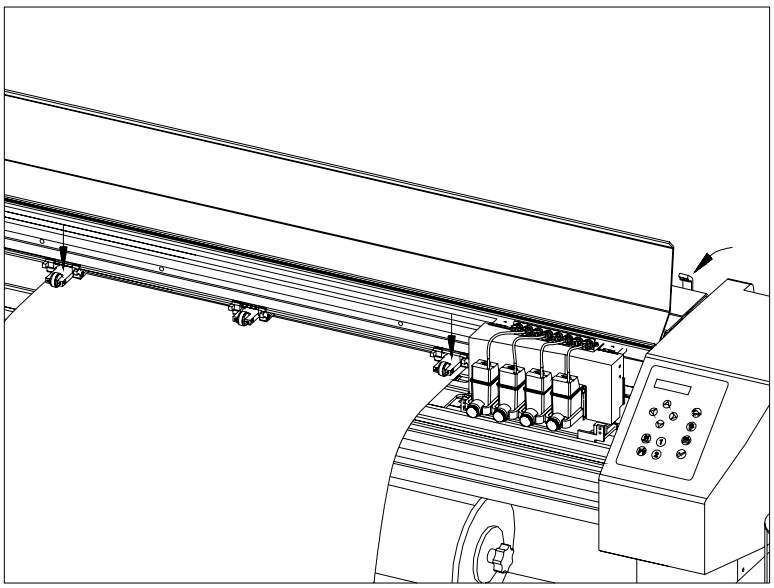


FIGURE 1 - 9
CLOSING PINCH ROLLERS

NOTE

It is not necessary to unroll the media manually from the roll. The cutter will unroll the media automatically during the load sequence.

7. The positioning and routing of sheet material is identical to that of roll media.

8. The cutter is now ready for the actual load procedure, which may be controlled from the control panel.

PICK-UP ROLL

NOTE

The pick-up roll is usually used for printing. It is advised not to use the pick-up roll when you intend to *cut* designs larger than 60 cm (23") in order to prevent the machine from pulling back the media from the pick-up roll and going into error.

1. Before using the pick-up roll, make sure that the following menu items are correctly set:

   Pick-up roll : on
   Front sensor : off

   To set these menu items, press the Menu key (MENU) until the message 'USER CONFIG. 1' appears on the display.

   Press the ▽ jogging key until the message 'SYSTEM SETUP' is displayed. Now press the ✔ key.

   Press the ▽ jogging key until the message 'PICK-UP ROLL' is displayed. Make sure that this setting is 'ON'. If not, press the ▷ key. Press the ✔ key to confirm the selection.

   Press the △ jogging key to select 'FRONT SENSOR'. Make sure that this setting is 'OFF'. Should this not be the case, press the ▷ key to switch to OFF. Press the ✔ key to confirm this selection.

2. Use the pick-up core with flanges installed on the two front rollers.

3. Open the camrollers.

4. Route the media as shown in Figures 10 and 11. Fix the media onto the pick-up core using some tape. Make sure that the media follows a straight path from the pick-up roll to the media roll.

   ***Note**: In order to minimise the loss of unprinted vinyl an extra sheet of waste vinyl can be used to make the routing between the pick-up core and the beginning of the media.*

5. Close the camrollers.

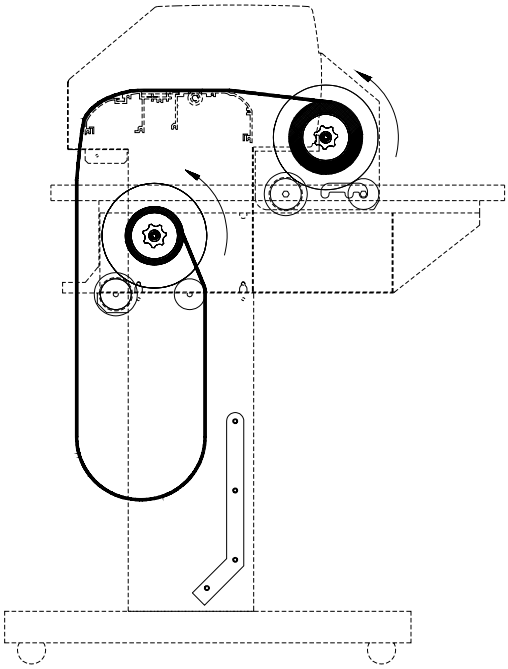


FIGURE 1 -10
MEDIA ROUTING - SIDE VIEW

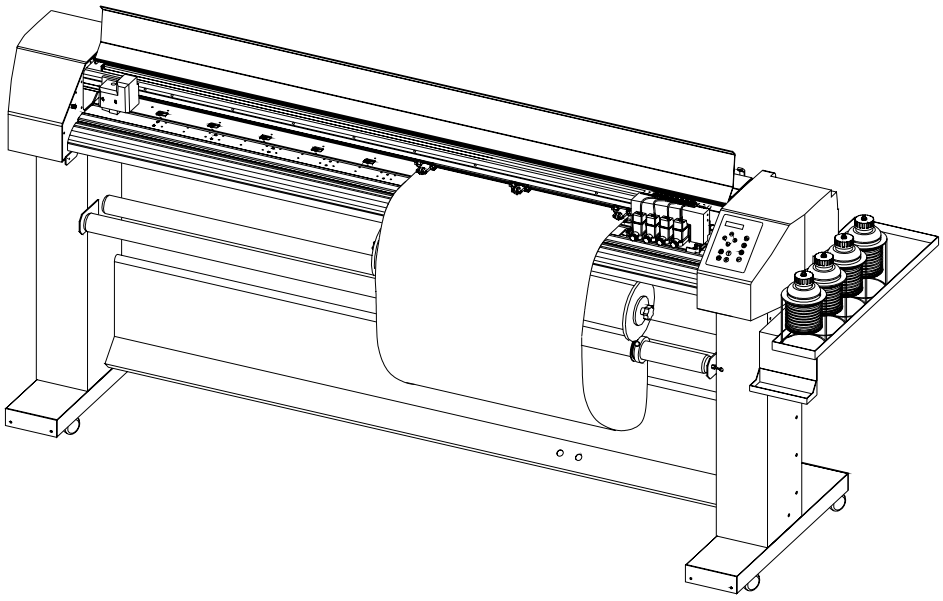


FIGURE 1 - 11
MEDIA ROUTING USING THE PICK-UP ROLL - FRONT VIEW

MEDIA LOAD PROCEDURE

SAFE OPERATION

Do not place any objects in front of, or behind, the cutter that could interfere with cutter operation. Make sure the media is free to move back and forth. Keep hands, hair, clothing and jewellery away from moving parts.

Turn the power on and the following message will appear on the LCD screen :

```
PLEASE WAIT
LOADING...
```

The cutter will automatically start executing a minimal loading procedure consisting of : - a media width measurement

- a 45° test
- media is unwound over a length equal to the width measured between the pinch rollers

When the next display appears, the cutter is ready to receive a file :

```
500mm/s  120 g                K
        ONLINE                1
```

When sending a cut file, the cutter will automatically pull the required media from the roll. The pulling is done in steps so that for each step the length pulled off the roll is identical to the width measured between the pinch rollers.

IMPORTANT

Tracking of longer signs is only guaranteed when you perform the full load procedure !

Proceed as follows to complete the full load procedure (recommended for long signs) :

Press the key and the following message will appear on the LCD screen :

```
      SET ORIGIN
X=0   Y=YYYY                ✓
```

Press the ↵ key again and the following message will appear on the LCD screen :

```
          LOAD
   1= ROLL  2= SHEET
```

Press the **1** key if you want to load media from **a roll**. Press the **2** key if you want to load media **in sheet form**.

If you choose "sheet" and the sensors are enabled, then the sheet is automatically loaded.
If you choose "roll", the following display will appear on the LCD :

```
      SET ORIGIN
X=0  Y=YYYY                 ✓
```

Using the ←, →, ↑, ↓ jogging keys, you can position the knife (i.e. the origin) at any location. Press the ✔ key to confirm the selected point of origin.

```
      MEDIA WINDOW
↑↓                          ✓
```

By pressing the ↑, ↓ jogging keys, you can enter the length of the media you need for your task.

```
      MEDIA WINDOW
XXXX  YYYY                  ✓
```

The XXXX-value is the media length you define with the ↑, ↓ jogging keys.
The YYYY-value is the cutting width of the media measured by the cutter.
Note : when the media length displayed is zero (0), the default media length will be used.
Press ✔ to confirm the length and the cutter will start "shuffling" the vinyl in order to establish a track on the vinyl.

If you pressed ✔ instead of the jogging keys for defining the media window, the default media length is displayed :

DEFAULT WINDOW	
↓↑ XXXX mm	✓

An XXXX-value appears. You can change the default value by pressing the ⏶ (+10), ⏷(-10), ⏴(-100), ⏵ (+100) jogging keys.
Press ✔ to confirm the length and the cutter will start shuffling the vinyl in order to set a track on the vinyl.

After shuffling, you get the following display :

500mm/s 120 g	K
ONLINE	1

The cutter is now ready to receive a file.

500mm/s 120 g	K
*ONLINE	1

The cutter has been selected by the computer.

When the built-in media sensors detect the end of the roll the message **END OF MEDIA** will be displayed. The display will show the actual length loaded.
If that area is sufficient, press **1** to **ACCEPT**.
If not, press **2** to **ABORT** and the media will automatically return to its origin.

CAUTION

When you accept the loaded area in sheet mode, the cutter will clip the sign to be cut in case of insufficient media. Compare the area loaded with the area needed for the sign !

INSTALLATION OF A KNIFE, BALLPOINT PEN

INSTALLING A STANDARD TANGENTIAL KNIFE

SAFETY WARNING

Your cutter uses razor-sharp knives. The knife blades may cause serious personal injuries if handled without proper care. Use extreme care when operating the cutter and when installing, removing or handling the knife!

➔ To set up your cutter for TANGENTIAL knife operation, proceed as follows.

1. Turn off the unit and move the cutting head manually so that it can be reached easily.

2. Turn the knife holder out of the cutting head while holding the nose piece at the bottom.

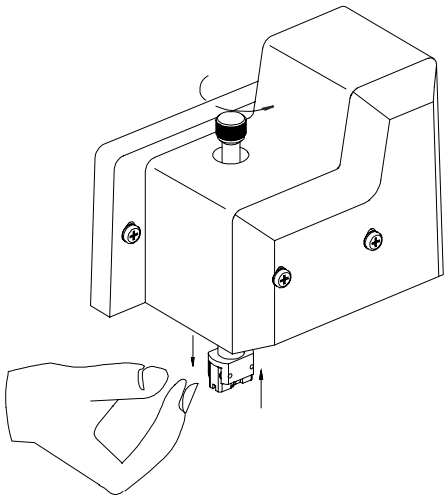


FIGURE 1 - 12
REMOVING THE KNIVE HOLDER

3. Insert the standard knife blade p/n 390-549 into the knife holder as shown in Figure 1 - 13. Make sure the knife blade is firmly fixed into the holder. The knife is firmly fixed when you cannot remove it manually from the knife holder.
   To remove a fixed blade when it has become too blunt, push against the back of the blade with the tip of a screwdriver. The blade will then jump out of its holder.
   This procedure is also valid for the installation of the optional double tip blade p/n 390-551.

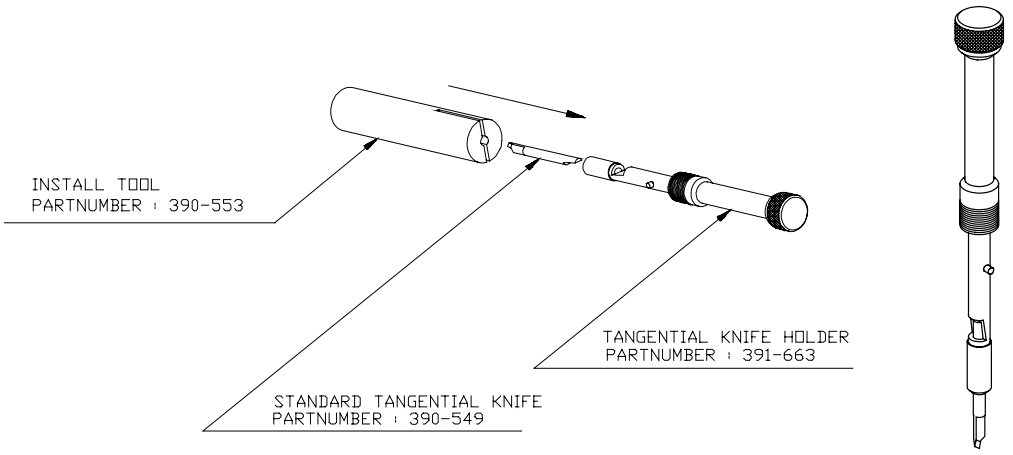


FIGURE 1 - 13
BLADE ASSEMBLY

4. Insert the **grey** nose piece as shown in Figure 1 - 14 until it snaps into the nose piece holder.

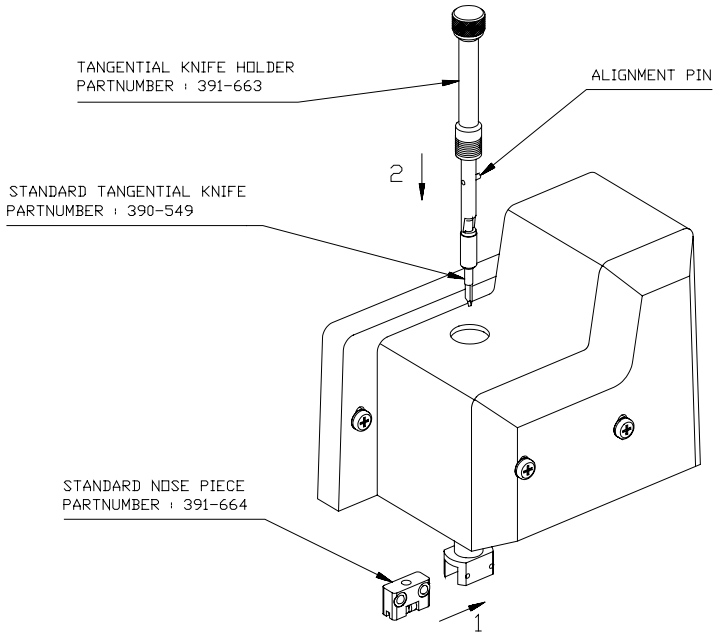


FIGURE 1 - 14
NOSE PIECE INSTALLATION

5. Gently insert the knife into the tool shaft as shown in Figure 1 - 14. Hold the nose piece in place with one hand, with the other hand turn the knife holder anticlockwise until the alignment pin fits into the small notch of the tool shaft. Now turn clockwise until the knife holder gets grip in the tool shaft.

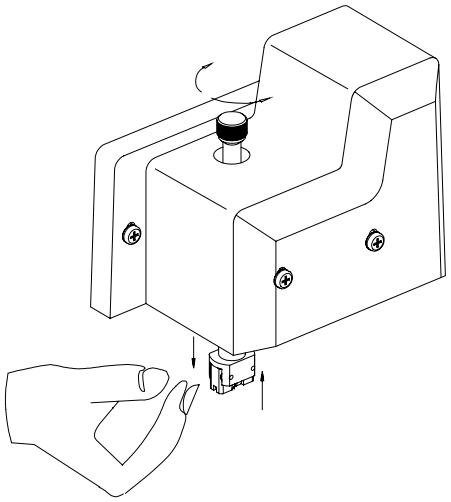


FIGURE 1 - 15
KNIFE HOLDER INSERTION

6. Holding the nose piece in place with one hand, adjust the knife depth with the other hand by turning the knife holder clockwise until the knife tip is just visible from under the nose piece as shown in Figure 1 - 16.

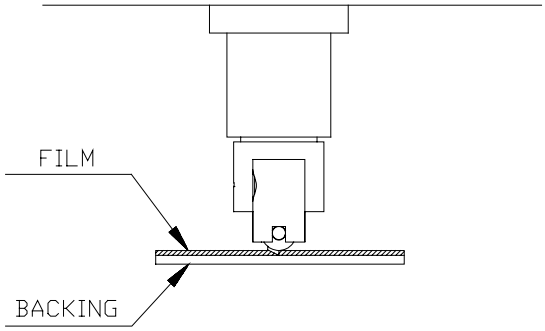


FIGURE 1 - 16
KNIFE DEPTH ADJUSTMENT

5. Set the knife pressure and knife depth as follows :

Load media and power on the cutter.

Press the key (MENU) key until the message 'USER CONFIG 1' is displayed on the LCD.

↓ USER CONFIG 1
← →

Press the jogging key until the message 'KNIFE PRESS' is displayed.

↑↓ KNIFE PRESS
← * 120 g → 1= TEST

Press the or key to modify the knife pressure.

To increase the cutting depth, turn the knife holder clockwise. To decrease the cutting depth turn the knife holder anticlockwise while holding the nose piece in place with the other hand.

Press the ✔ key to confirm the selection.

Press the **1** key to perform a knife depth test as illustrated Figure 1 - 17.

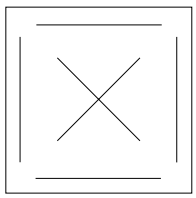


FIGURE 1 - 17
KNIFE DEPTH TEST PATTERN

The knife depth is correctly set when the test pattern is visible on the front side of the media backing, but not on the rear side of the media backing. In general, you should increase the knife depth and knife pressure when using thicker types of vinyl.

NOTE

As the ideal knife pressure and depth setting depends upon the thickness and the type of media to be cut, adjusting the pressure and depth of the knife will require some practice. In general terms, you should increase the pressure and depth of the knife when cutting thicker types of vinyl . For thinner types of vinyl, you will normally have to reduce the knife pressure and depth.

CAUTION

After setting the cutting depth and/or the knife pressure, perform a thorough visual check of the knife blade, which can be seen protruding from the knife holder, and test cutting results on a scrap of vinyl media.
Do not operate the cutter if the knife blade cuts through the media backing, as this will seriously damage the cutter's rubber cutting strip and the knife.

CAUTION

For most vinyl cutting operations, the knife blade tip will be barely visible at the bottom of the knife tool. If you can clearly see the knife blade tip, you will probably need to readjust the cutting depth.

To prevent damage to the cutter, check the depth of the knife blade tip and the quality of the cut each time you load a different type of vinyl into the cutter.

INSTALLING A KNIFE FOR CUTTING MASKING STENCIL OR HEAVY MATERIALS

The SummaPaint PC1500 can also be operated with a **knife for masking stencil**. After replacing the knife the cutter can be used to cut through heavy materials like masking stencil.

1. As shown in Figure 1 - 18, insert the knife blade into the knife holder. Make sure the knife blade is firmly fixed into the holder. The blade is firmly fixed when you cannot remove it manually from the knife holder. To remove the blade when it is too blunt, push at the back of the blade with a screwdriver. The blade will jump out of its holder.

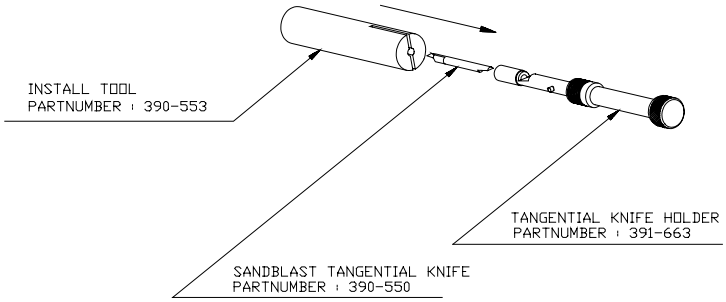


FIGURE 1 - 18
BLADE ASSEMBLY

2. Insert the **black** nose piece as shown in Figure 1 - 19 until it snaps into the nose piece holder. When cutting masking stencil always replace the standard nose piece (grey colour) by the masking stencil nose piece (black colour).

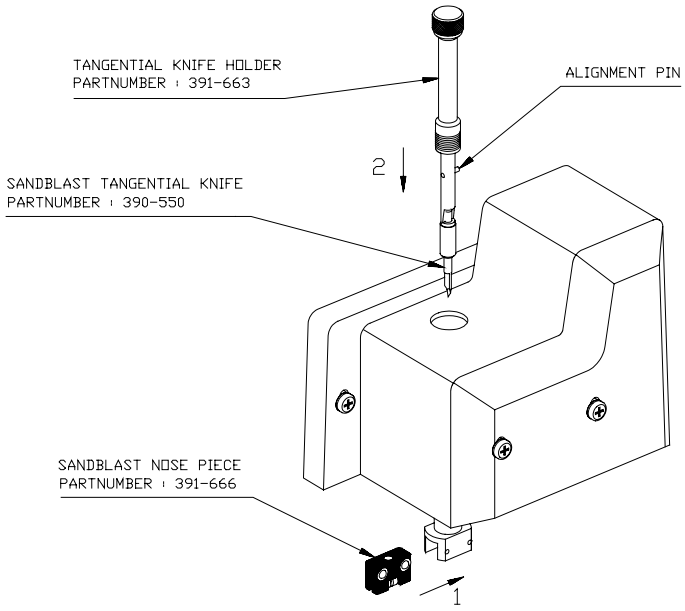


FIGURE 1 - 19
NOSE PIECE AND KNIFE INSTALLATION FOR CUTTING
MASKING STENCILS OR HEAVY MATERIALS

3. Gently insert the knife into the tool shaft as shown in Figure 1 - 19. Hold the nose piece in place with one hand, with the other hand turn the knife holder anticlockwise until the alignment pin fits into the small notch of the tool shaft. Then turn the knife holder clockwise until it gets grip in the tool shaft.

4. For knife pressure and depth setting, refer to section 1.10.1.

NOTE

When cutting masking stencil or heavy materials, it can be necessary to lower the cutting speed of the machine. Very heavy materials should be cut at a speed

of 100 mm/s (4 ips) to get no overcurrent error caused by the drive motors.
To change the cutting speed, refer to paragraph 2.3.4.

INSTALLING A DRAG KNIFE

The SummaPaint PC1500 can also be operated with a **DRAG** knife. This feature requires a drag knife and drag knife holder.

1. Remove the tangential knife by turning the knife holder anticlockwise with one hand while holding the nose piece in place with the other hand.

2. Insert the drag blade into the drag knife holder as shown in Figure 1 - 20.

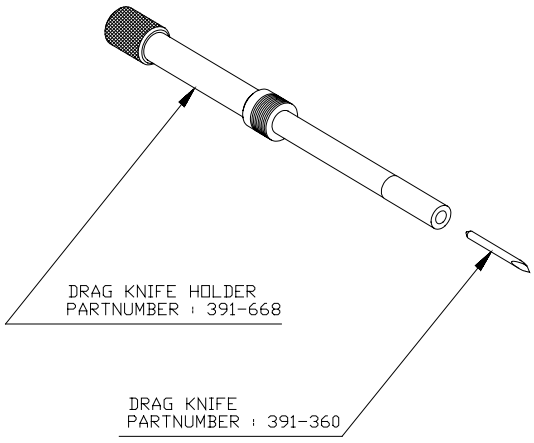


FIGURE 1 - 20
DRAG KNIFE ASSEMBLY

3. Remove the nose piece (refer to Figure 1 - 21).

4. Insert the drag knife in the tool shaft as shown in Figure 1 - 21. Turn the drag knife holder clockwise while holding the nose piece holder in place.

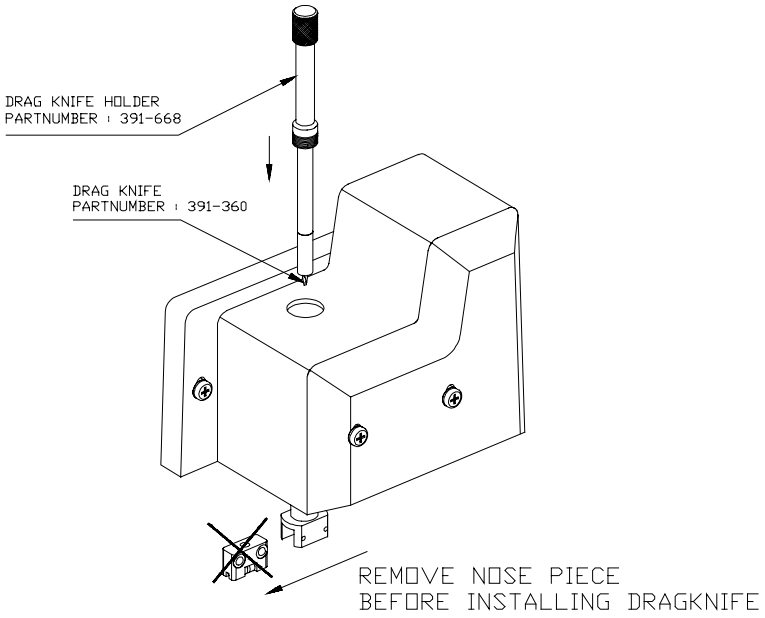


FIGURE 1 - 21
DRAG KNIFE HOLDER INSERTION

5. To configure the cutter for drag knife operation, press the key (tool select).
   Then press the left or right jogging key until DRAG KNIFE appears on the second line of the LCD .
   Press ENTER and an asterisk will appear next to DRAG KNIFE. This indicates that the DRAG KNIFE is selected. The drag knife will remain selected until another tool is selected or the cutter is powered down. To start up the cutter in drag knife mode refer to section 2.4.5 (tool submenu of the USER CONFIG MENU).

6. To set the pressure of the drag knife, refer to paragraph 1.10.1.

7. To set the knife offset, perform the knife offset test described in paragraph 2.3.3.

INSTALLING A BALLPOINT PEN

The SummaPaint PC1500 can also be operated with a **BALL POINT** pen. After replacing the knife with a ball point pen, the cutter can be used as a plotter to draw draft plots of new or existing designs on paper.

➔ To install the ball point pen, proceed as follows:

1. Remove the knife by turning the knife holder anticlockwise with one hand while holding the nose piece in place with the other hand.

2. Remove the nose piece (refer to Fig 1-21).

3. Insert the ballpoint pen holder into the tool shaft as shown in Figure 1 - 22.

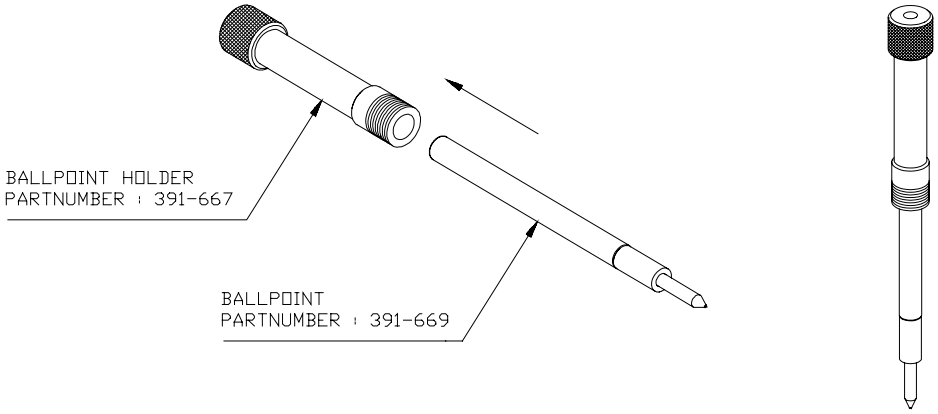


FIGURE 1 - 22
BALLPOINT PEN ASSEMBLY

4. Install the ball-point pen as shown in Figure 1 - 23. Insert the ball point pen holder as far as possible by turning it clockwise while holding the nose piece holder in place with the other hand.

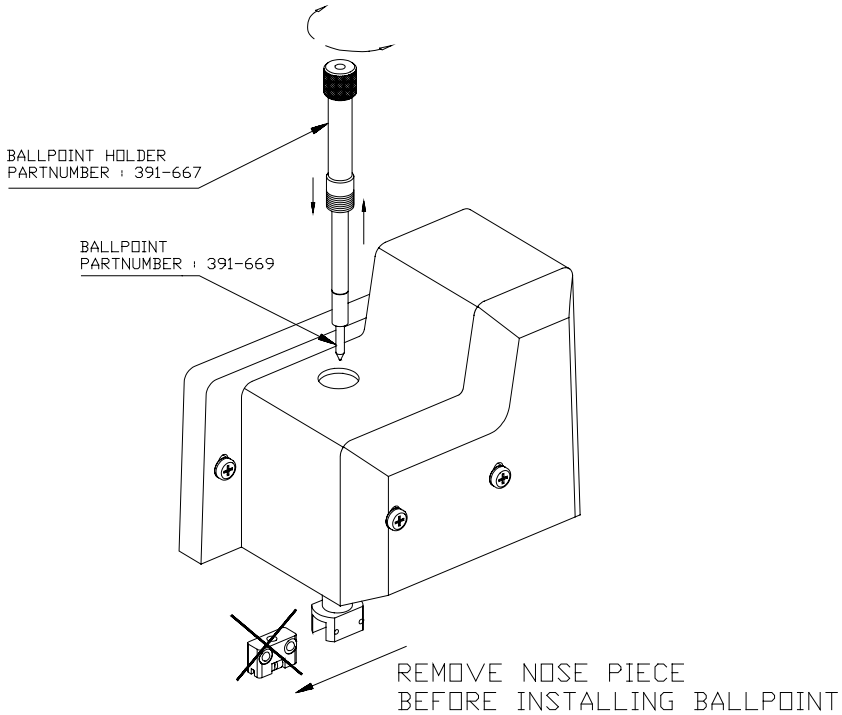


FIGURE 1 - 23
BALLPOINT HOLDER INSERTION

5. To configure the cutter for ballpoint pen operation, press the key.
Press the left or right jogging key until BALLPOINT appears on the second line of the LCD .
Press ENTER and an asterisk will appear next to BALLPOINT, this indicates that the ballpoint is selected.

A small P (for "Pen") will be displayed in the upper right corner of the LCD.

INSTALLING THE INK CARTRIDGES

NOTE

The cartridges will dry out quickly so it is advised to keep them in their original packaging until you're ready to install them.

The service station prevents the drying out of the cartridges. However, if the cartridges are not being used for more than 24 hours it is advisable to put the cartridges back in a cartridges clamp. The cartridge clamps should be kept clean by rinsing them with clean water each time they are used.

Each time one or more cartridges has been (re-)installed it is necessary to re-calibrate the cartridges as described in section 2.

Cleaning of the cartridges is described in section 3.

To install an ink cartridges proceed as follows:

1. Turn on the unit. Make sure that the media is properly loaded. Close all tubes of the ink supply system by means of the clips nearby the inkbottles.

2. When the unit is 'Online' press on the key. The print carriage will move next to the service station. Every three seconds a beep will warn you that the print carriage is not in the service station.

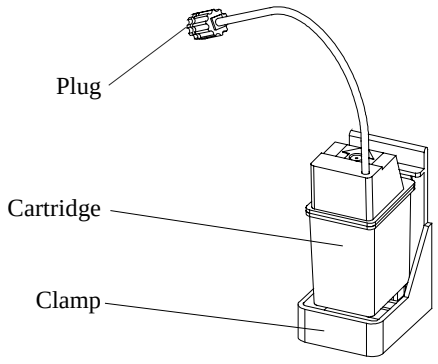


FIGURE 1 - 24
INKCARTRIDGE AND CLAMP

CAUTION

Handle the cartridge with extreme care, because it is easily damaged.

3. If the cartridge is filled with a transport fluid then first suck this out by means of the syringe. Keep the cartridge in the clamp. If the cartridges are filled with ink, skip this step.

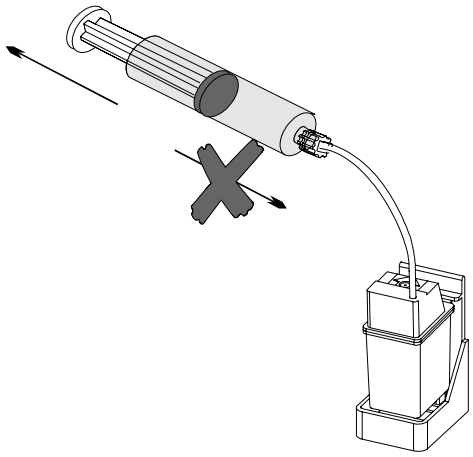


FIGURE 1 - 25
INKCARTRIDGE BOTTOM VIEW

4. When the fluid is completely removed from the cartridge, remove one of the two plugs that has the corresponding color from the print carriage.

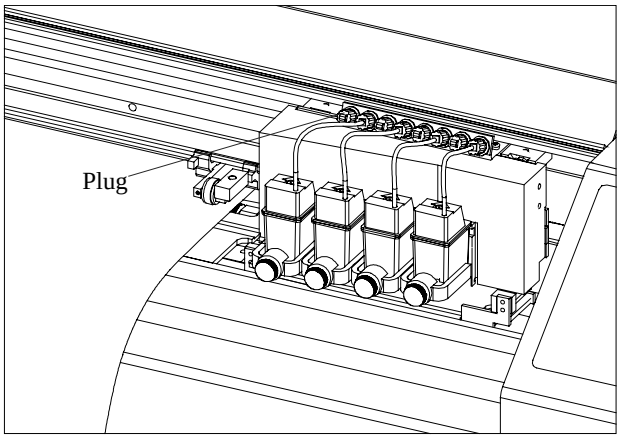


FIGURE 1 - 26
CONNECTING AN INK CARTRIDGE

NOTE

The unit is equipped with twice four tubes so that two different kinds of ink can be used. To use the four bottles in the front, use the right connections of each colour on the print carriage. To use the four bottles at the back, use the left connections of each colour on the print carriage.

5. Connect the tube of the cartridge to the connector on the print-carriage. Turn the tube a little counterclockwise before connecting it clockwise so that the tube is not twisted while it's being connected.

6. Take the ink cartridge out of its clamp. Do not remove any protective tape. Clean the copper contacts with a dampened soft lint free cloth.

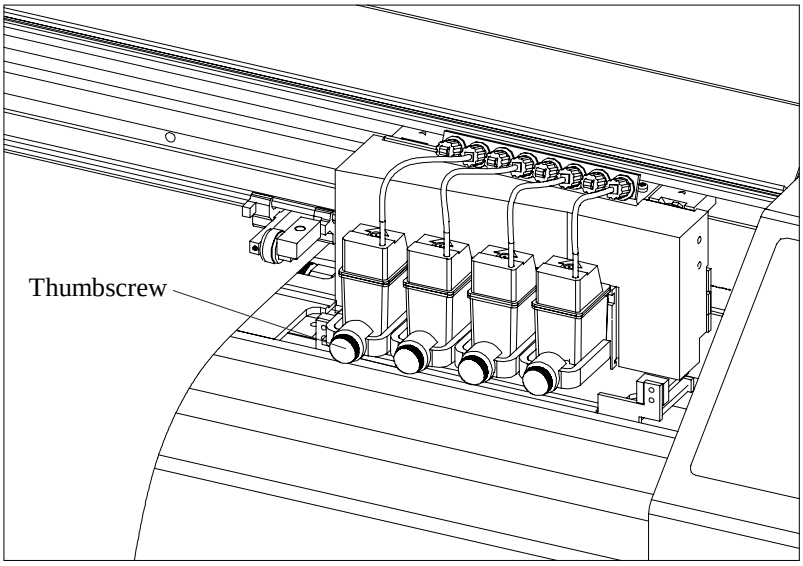


FIGURE 1 - 27
INSTALLATION OF AN INK CARTRIDGE

7. Turn the thumbscrew on the carriage counterclockwise to make space for the cartridge.

8. Hold the cartridge so that the arrow on top is pointing towards the machine and insert it into the space.

9. Push the cartridge forward and hold it in position. Tighten the thumbscrews clockwise. DO NOT OVERTIGHTEN THEM.

10. Follow steps 3 to 10 for the other cartridges.

11. Open the tubes by opening the clips.

12. Press on any key to move the print carriage back to the service station.

→ To remove a cartridge proceed in reverse order.

Inserting the ink

CAUTION

The ink can be harmful if swallowed. Keep the ink away from children. Wear protective clothing and gloves when working with the ink.

NOTE

If the unit is not being used for a while it is advised to clean the tubes by blowing the ink back into the bottles (See section 3 of the User Manual).

1. Power on the unit. Make sure that the media is properly loaded.
2. When the unit is 'Online' press on the key. The print carriage will move next to the service station. Every three seconds a beep will warn you that the print carriage is not in the service station.
3. Remove the cap of the bottle of the inking system. Pour the matching ink in the bottle and close it tight again.

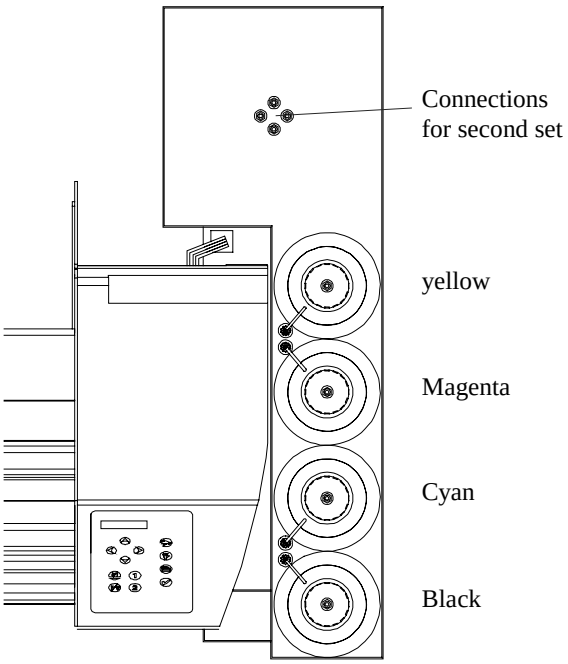


FIGURE 1 -28
POSITION OF THE INK BOTTLES

4. Connect the priming bulb on top of the bottle, and make sure that the tube is open by opening the clip nearby the bottle.

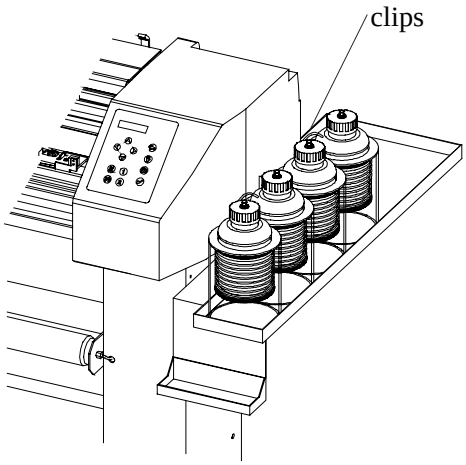


FIGURE 1 - 29
INK BOTTLES & CLIPS

5. Turn the knob on the carriage counterclockwise to loosen the matching cartridge, and take the cartridge out of its holder. Make sure that the tube of the cartridge is well connected to the print carriage (see above).

6. Make sure that you have some absorbent paper within reach.

7. If the cartridge and the tubes have already been filled, proceed with step 9. If not, hold the cartridge upside down and remove the tape as shown in Figure 1-30. (Do not remove the tape from the nozzles.)

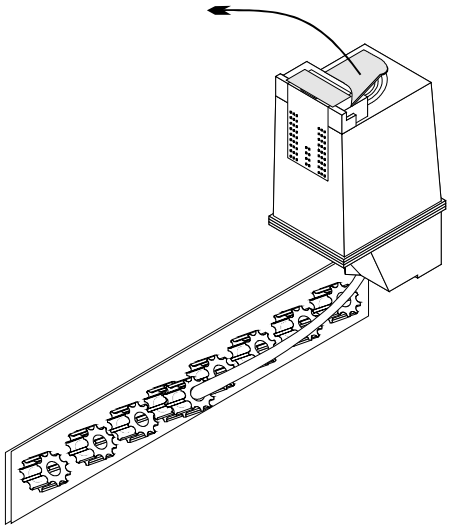


FIGURE 1 - 30
Filling the cartridge

8. Pump the ink through the tubes. When all the air is out of the tubes and the cartridge is filled for at least 75 %, close the clip nearby the bottle to stop the ink from flowing into the cartridge.

CAUTION

Pump gently! It takes some time before the ink flows through the tubes. Use soft absorbent paper or soft lint free cloth to remove the outcoming ink.

9. Put a piece of adhesive tape on the bottom and on the top of the cartridge (See Figure 1-31).

10. Hold the cartridge with the nozzles down above a reservoir. Remove the protective tape on the nozzles and open the clip nearby the bottle. Some air may appear in the tube. Pump some air in the inkt bottle so that the ink starts leaking through the nozzles. As soon as all the air is blown in the cartridge, close the clip nearby the bottle to stop the ink from flowing to the cartridge. Remove the priming bulb and open the clip again.

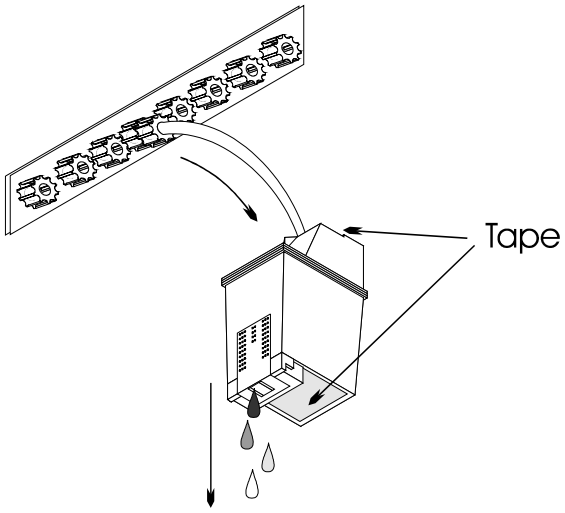


FIGURE 1 - 31
FILLING THE CARTRIDGE

11. Clean the nozzles and the copper contacts if needed. Never place the cartridge in the print carriage when it is moistened with ink. The ink can be removed with a dampened soft lint free cloth.

12. Hold the cartridge so that the arrow on top is pointing toward the machine and place it back into the holder.

13. Push the cartridge forward and hold it in position. Tighten the thumbscrew clockwise. DO NOT OVERTIGHTEN IT.

14. Follow steps 2 to 12 for the other colors.

15. Press any key to return the print carriage to the service station.

NOTE

To check whether all nozzles are working fine, perform the nozzle test (see section 2). For further calibration of the cartridges, see Section 2.

Refilling Ink

CAUTION

The ink can be harmful if swallowed. Keep the ink away from children. Wear protective clothing and gloves when working with the ink.

NOTE

Make sure that the ink level in the bottles never goes below 1 cm (0.4") in order to prevent air-bubbles from coming in the tubes. Air-bubbles will cause malfunctioning of the printer. When this problem occurs the "Inserting the ink" section (1.12.) has to be repeated until all air-bubbles have disappeared.
Using the bottles until they are completely empty will cause the cartridges to leak, which will result in the picture to be damaged.

Refilling the ink can simply be done as follows:

1. Refilling normally takes just a few minutes so that this can be done while the printer is working.

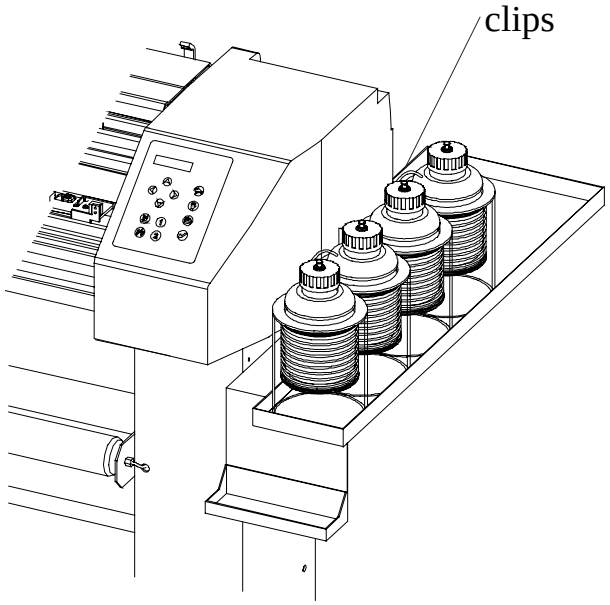


FIGURE 1 - 32
REFILLING INK

2. Remove the cap of the bottle of the inking system. Pour the matching ink in the bottle and close it tight again.

PRINT & CUT

INTRODUCTION

Basically, there are two ways of contour cutting.

The first way is to print and cut the sign in one job. This means that the media remains in the unit between the printing and cutting jobs. This process is controlled by the drivers of specialized software, and no human interference is required.

The other way of contour cutting allows the design to be printed on an other unit, or to remove the design after printing from the SummaPaint for laminating. In both cases the cutter must have the ability to locate the exact position of the printed signs. Therefore, the SummaPaint is equipped with accurate alignment methods to guarantee precise contour cutting. Depending on the selected alignment method the SummaPaint is able to compensate for the following issues:

1. If the printed design is not straightly loaded into the unit, the contour can be rotated.
2. If the X and Y axes of the printed design are not exactly perpendicular, the contour can be skewed.
3. If the print size is not correct, the contour can be scaled.

The parameter SPECIAL_LOAD in the user config. menu (see section 2) determines which alignment method is used. These methods are based on the principle of registration markers that are printed together with the drawing. For the manual alignment methods these markers can be of any type. The automatic method, however, requires the markers to be black squares so that the sensor can detect them.

There are three manual alignment methods and one automatic alignment method.

Manual alignment methods:

1. ***X-Axis Align*** : For this method, the origin and one point along the x-axis must be specified. This method only rotates the contour. It does not require any parameter.
2. ***XY-Axis Align*** : For this method, the origin, one point along the x-axis and one point along the y-axis must be specified. This method rotates and skews the drawing. It does not need any parameter.
3. ***XY-Adjustment*** : For this method, the origin, one defined point along the x-axis and one defined point along the y-axis must be specified. This method rotates, skews and scales the drawing. It requires two parameters (x_distance and y_distance). These distances define the position of the two points along the axes (see further).

→ When performing one of these three manual alignment methods, the display will prompt you to place the knife tip on top of the registration markers. Try to do this with extreme accuracy because it directly influences the precision of the contour cut.

Automatic alignment method:

1. ***OPOS*** : this is the automatic, and at the same time the most accurate method. A more detailed description of this method can be found below.

General

NOTE

The OPOS system is automated in most of the Software that support the SummaPaint PC1500. This means that the software takes care of the registrations markers and the required parameters. Refer to the user manual of your Software.

The manual alignment methods are simplified forms of the OPOS (optical positioning system). Therefore the OPOS is explained below:

The OPOS sensor senses the printed markers around the printed design. From the position of the markers the OPOS recalculates the lines to be cut so that exact contour cutting can be done.

OPOS has the following concept:

- Create the design you want to perform the contour cut on
- Define the contour
- Place markers around your design, of which the sizes and distances are known (depending of the alignment method that is chosen)
- Print out the design with the black markers
- Load the printed design in the cutter
- Set the parameter of the markers in the cutter
- Execute the special load procedure
- Cut out the contour

NOTE

If the OPOS does not work accurately it may be necessary to calibrate the system (Section 2).

MARKER SPECIFICATIONS

In order to cut accurately on vinyl, the printed image must have markers over its whole length. The markers should be black (on white vinyl) and positioned as shown in Figure 1-33**.** The markers should be set at the same time and with the same print machine as the printed image, without removing the vinyl between the marker and the image.

The x-axis is the paper direction, the y-axis is the axis along which the head of the cutter is moving.

If these parameters cannot be set in your software you can change them with SummaPaint Control Software.

NOTE

The lower right corner of the lower right marker (= the origin-marker) must determine the origin (0,0) of both the printed file and the cut file.

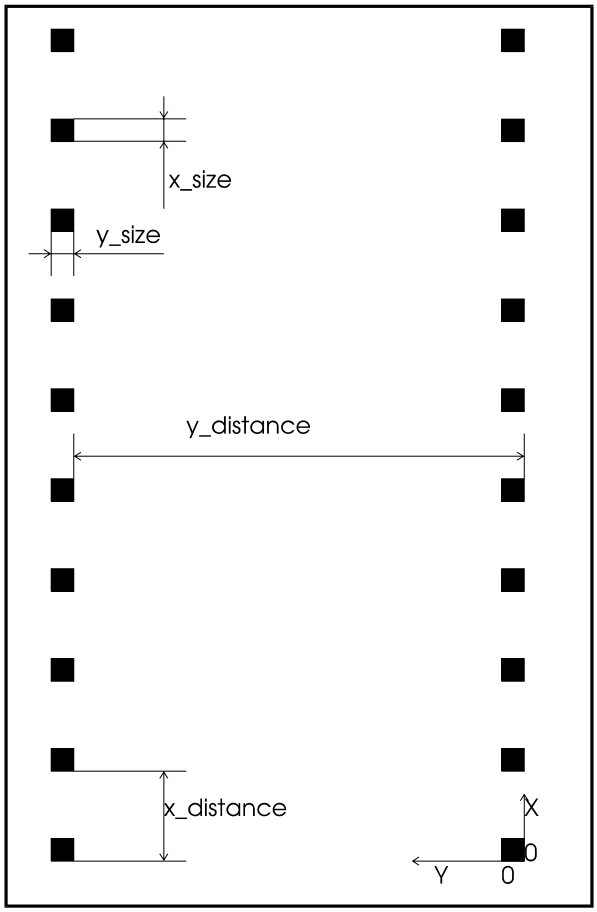


FIGURE 1 - 33
MARKER SPECIFICATIONS

	Default value	Range
X_distance	60 mm	30 mm to 1300 mm
Y_distance	540 mm	30 mm to 1300 mm
x_size	1.5 mm	1.2 mm to 10 mm
y_size	1.5 mm	1.2 mm to 10 mm
markers quantity	14	2 to 64

CONTOUR CUTTING WITH OPOS

1. Before cutting the vinyl, the media must be loaded according to the loading procedure as described in section 1.

NOTE

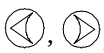
Place the vinyl in such a way that the marker representing the point of origin of the drawing is situated in the front right.

2. Press the key until the message 'SPECIAL LOAD' is displayed on the LCD. (Note : Some software is activating this command automatically. Then proceed with step 3).

SPECIAL LOAD

3. Press ✔ and the following message will appear on the LCD:

PLACE SENSOR ABOVE LOWER RIGHT MARKER

4. Position the sensor exactly above the origin-marker using the  jogging keys,

Click the sensor box down manually.
Press the ✔ key to confirm the selected point of origin.

The cutter will now scan the markers and store the origin.

In case something may have gone wrong the following message will be displayed : ' ERROR: MARKERS NOT SENSED PROPERLY'

5. Click up the sensor-box. You can now send the cut file with your usual application software for cutting (e.g. WinCut or MacCut).

SECTION 2

OPERATION

1.1. SummaPaint control.

The SummaPaint Control Program for Windows is a tool to optimise the overall cutting and printing quality of your PC1500.

For information on the installation or general set-up of this program, refer to the 'Readme.txt' file on the installation disk.

The SummaPaint Control program basically has the same functions as the control panel. It is up to the user to decide which way he will work most efficiently. The users who will work with the SummaPaint Control program will notice that it is a very powerful and practical tool.

By clicking on the 'Menu' button in the main SummaPaint Control window all the machine settings can be changed.

Four different user configurations can be saved in the cutter's memory. The selected configuration number is marked at the bottom of the menu window. These four configurations are maintained independently.

1.2. THE CONTROL PANEL

Figure 2-1 shows the control panel of the SummaPaint PC1500. The main functions of the liquid crystal display (LCD) and the control panel keys are explained in the following paragraphs.

FIGURE 2 - 1
SUMMAPAINT PC1500, CONTROL PANEL

1.3. The Liquid Crystal Display

The 32-character liquid crystal display (LCD) contains two lines of 16 characters each. The LCD provides cutter status information during operations and displays menu options for the configuration of the cutter.

The contrast of the LCD can be adjusted from the control panel in order to ensure optimum readability under varying lighting conditions.
Instructions for adjusting the LCD contrast are given in Section 2.1.67.

The various menu and submenu items are always presented in a loop, which means that, when the last menu or submenu item is displayed, pressing the appropriate key will automatically take you back to the first item of the same menu or submenu.

Next to the status messages and/or menu options displayed on the LCD, arrow symbols representing the , , , jogging keys and the ✔ key will tell you which keys to press to go to the next menu item (top line of the display) or to the next value for a given submenu item (bottom line of the display).

1.4. THE RESET/LOAD Key

The key (RESET/LOAD) is used to move the origin, to initiate a load sequence, to reset the machine or to abort the job in progress. When the key (RESET/LOAD) is pressed, the unit goes off line, suspends all operations in progress and displays the RESET/LOAD menu. Press the key until SET ORIGIN, LOAD, RESET, ABORT or SPECIAL LOAD is displayed. To confirm RESET, ABORT or SPECIAL LOAD press the ✔ key (ENTER). To execute the SET ORIGIN instruction move the knife origin using the , , , jogging keys and press the ✔ key (ENTER) to confirm the new origin position. To initiate the LOAD instruction press the **1** or **2** key to initiate a load sequence for a ROLL or SHEET respectively. Upon termination of any of these instructions, the cutter goes on line again.

The SET ORIGIN instruction is used to move the knife origin.
The LOAD instruction is used to initiate a load sequence.
The RESET instruction performs a complete reset of the cutter.
The ABORT instruction simply cancels the cut in progress. Aborting a cut will not reset the cutter parameters: the parameters which had been selected for the cut remain in effect.
The SPECIAL LOAD instruction activates the OPOS system (see Section 1).

1.5. The ON LINE Key

The key (ON LINE) toggles between on line and off line operation. When the key is pressed, the selected mode (ON LINE or OFF LINE) is displayed on the LCD.

Selecting OFF LINE will suspend all operations in progress. Pressing the key while the cutter is off line will make the machine go on line again, resuming the suspended operation.

While the machine is off line, the following operations can be performed:

- Press the ◁ or ▷ jogging key to move the tool carriage to the left or right. (disabled in printing mode)
- Press the △ or ▽ jogging key to make the media move forward (towards you) or backward (away from you). Moving the media forward will prove to be very practical when you require to cut the finished sign off manually.
- Press the key (TOOL UP/DOWN) to lower or raise the active tool of the cutting head. If the tool is not moved for approximately eight seconds, it is raised automatically (disabled in printing mode).

1.6. The MENU Key

The key (MENU) is used to select one of the menus. Pressing the key will make the cutter go off line and suspend all operations in progress. Pressing the key repeatedly will display the different menus one by one. As the menu options are on a loop, pressing the key when the last option is displayed will automatically return you to the first option.

The different menus are illustrated in Figure 2-2.

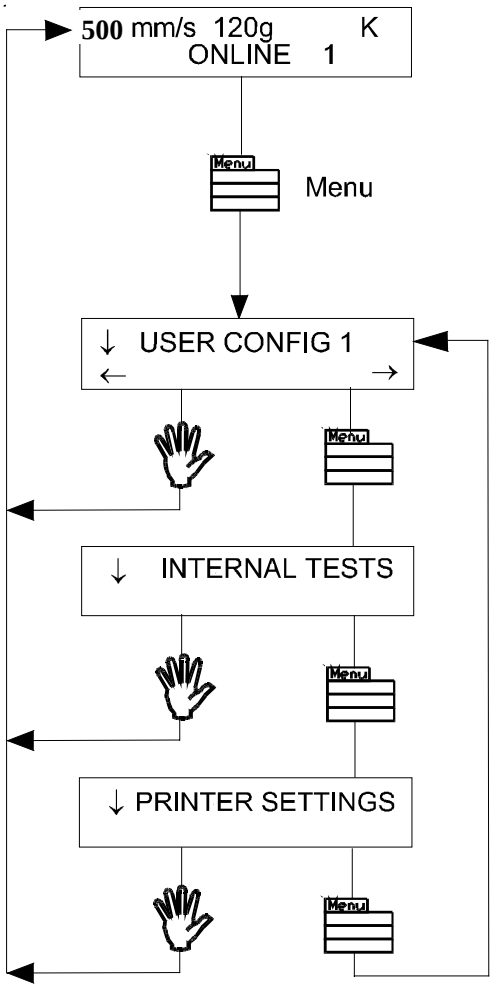


FIGURE 2 - 2
SUMMAPAINT PC1500, CONFIGURATION SUBMENUS

To select a menu by scrolling through the different options, press the jogging key .

To exit the menus and resume the previous on line operation, press the key (ON LINE).

Under normal conditions, the machine is on line; it may then be selected by the host computer for a printing or cutting operation or deselected by the host computer. Pressing the , or key will make the cutter go off line, in order to initiate another operation.

The contents of the different menus are summarised in Table 2-1.

MENU	DESCRIPTION
USER CONFIG 1 (->4)	Selects a given active cutter configuration from one of the four sets of configuration parameters stored in the unit's memory
INTERNAL TEST	Activates one of the resident cutting plots provided for informational purposes.
PRINTER SETTINGS	Activates the internal printing tests and printing parameters

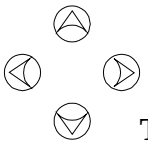
TABLE 2-1:
CONTENTS OF THE SUMMAPAINT PC1500 MENUS

1.7. ✔ The ENTER Key

The ✔ key (ENTER) is used to select the item currently displayed on the LCD.

1.8. 1 2 The 1 and 2 Keys

The use of the **1** and **2** keys varies according to the operation in progress; their use is displayed on the LCD as appropriate.



1.9. The Jogging Keys

The use of the jogging keys varies according to the operation in progress.

For example, when working in the USER CONFIG menu, the ◁ or ▷ jogging key is used to select the new user number and the △ or ▽ jogging key is used to go to the previous or next menu item.

1.10. The TOOL UP/DOWN Key

The key (TOOL UP/DOWN) is used while the cutter is off line to raise or lower the tool. Pressing the key once will lower the tool onto the media. Pressing the key again will raise the tool.

If the tool is not moved for approximately eight seconds, it is raised automatically. (This key is disabled in print mode)

If the key is pressed while the unit is online, the print carriage will move just beside the service station. Pressing any key will move the print carriage back.

1.11. THe tool select key

The key (TOOL SELECT) is used to select one of the following tools :
a tangential knife
a drag knife
a ballpoint pen

To temporarily change the tool, press the key, then press the or jogging key until the desired tool appears on the second line o the LCD. Press the ✔ key to confirm the tool. An asterisk * appears next to the selected tool. When the cutter is powered on the next time, the default tool will be selected. For setting up the default tool see Section 2.1.27.

1.12. NORMAL OPERATION

The term "normal operation" covers on line operation, off line operation and local operation, i.e. the three types of operation for actual cutting or plotting. They are explained in further detail in the following paragraphs.

1.13. On line and Off line

On line and off line are two important concepts when using the SummaPaint PC1500. The cutter is on line only when one of the following messages is displayed on the LCD :

Online in cutting mode:

```
500mm/s  120 g                K
.45mm(1)  *ON LINE          1
```

This display message should be read as follows :

500 mm/s	=	velocity
120 g	=	knife pressure or pen pressure
K	=	knife operation (K) or pen operation (P)
.45 mm(1)	=	knife offset - only displayed when in drag knife mode
*ON LINE	=	cutter is ready to receive data
1	=	user number

Online in printing mode:

```
PRINT MODE                    K
        *ON LINE            1
```

This display message should be read as follows :

PRINT MODE	=	indicates that the machine is in print mode.
K	=	knife operation (K) or pen operation (P)
*ON LINE	=	printer is ready to receive data
1	=	user number

In all other cases, the cutter is off line.

When on line, the cutter can be addressed by the host computer, which means that the cutter will execute cutting or plotting instructions issued by the host computer's application software.

For normal operations, the cutter **MUST** be on line, so that it can receive instructions from the host computer and the printing/cutting software.

When the machine is on line, the following conditions must be met:

- The cutter must be powered ON.
- Media must be loaded. For detailed media loading instructions, see Section 1.8 .
- The proper tool must be installed.
- The unit must be connected to the host computer via the parallel interface and / or the RS-232-C link.
- The unit must be configured for the scheduled operation.

To put the cutter off line, press the , or key. Pressing any of these keys will suspend the current cutting operation until the PC1500 is put on line again. Pressing the key will suspend the current printing operation until the PC1500 is put online again.

1.14. Local operation

Local operation is only possible while the machine is off line. Local operation means that the machine is operated directly by the operator via instructions entered on the control panel.

➔ To work in local operation mode, proceed as follows:

1. If the machine is still on line, press the key once to select off line. The media will move forward over a certain distance.
2. To move the carriage to the left or right, press the or jogging key. (Disabled in print mode)
3. To make the media move forwards (towards you) or backwards (away from you), press the or jogging key.
4. To move the tool head up or down, press the key. (Disabled in print mode)
5. To end local mode and put the cutter on line again, press the key.

1.15. THE USER CONFIG MENU

The USER CONFIG(uration) menu gives access to different submenus which allow you to configure the cutter's operating parameters. It should be taken into account that access to some of the submenus will be determined by the plotting language you are using.

Four different user configurations can be saved. The selected configuration number is displayed on the LCD next to the USER CONFIG message. These four USER CONFIG 1(->4) menus are maintained independently.

➔ To select another **configuration number**, proceed as follows:

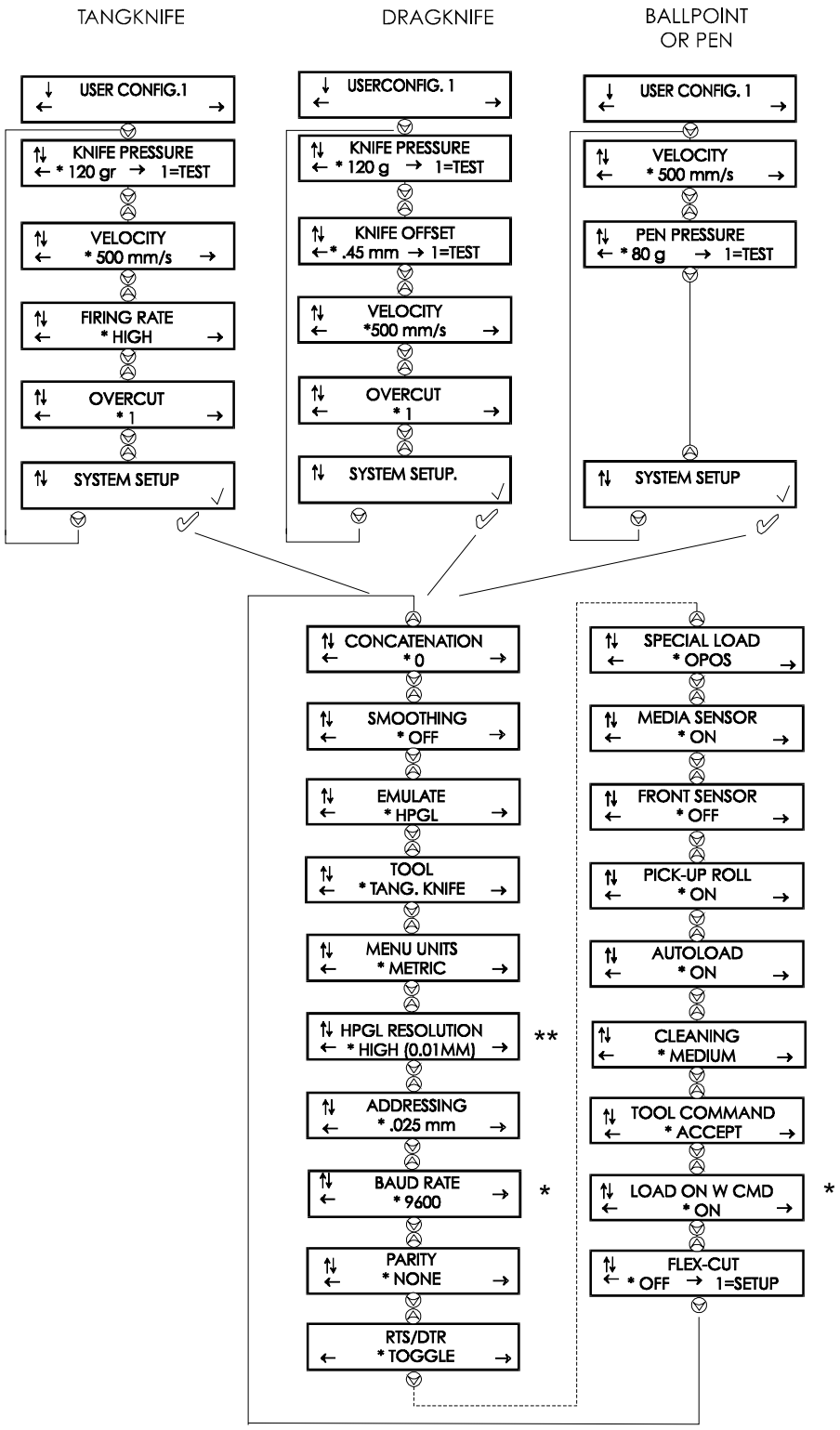
1. Power on the cutter.
2. Press the Menu key until USER CONFIG 1(->4) is displayed.
3. Press the ◁ or ▷ jogging key until the desired configuration number is displayed next to USER CONFIG.

> **NOTE**
>
> Before altering any of the items in the USER CONFIG menu, make sure that you have previously selected the right configuration number in the USER CONFIG 1(->4) menu.

Figure 2-3 shows the USER CONFIG submenus.

➔ To select and alter a configuration parameter, proceed as follows:

1. Power on the cutter.
2. Press the Menu key until USER CONFIG 1(->4) is displayed.
3. Press the, ▽ or △ jogging key until the desired submenu is displayed on the first line of the LCD.
4. Press the ◁ or ▷ jogging key until the desired value is displayed on the second line.
5. Press the ✔ key to confirm the selection, an * will be displayed next to the selected setting. (An * is always displayed next to the active value.)


TANGKNIFE
DRAGKNIFE
BALLPOINT OR PEN
USER CONFIG.1
KNIFE PRESSURE ← * 120 gr → 1=TEST
VELOCITY ← * 500 mm/s →
FIRING RATE ← * HIGH →
OVERCUT ← * 1 →
SYSTEM SETUP
USERCONFIG. 1
KNIFE PRESSURE ← * 120 g → 1=TEST
KNIFE OFFSET ← * .45 mm → 1=TEST
VELOCITY ← *500 mm/s →
OVERCUT ← * 1 →
SYSTEM SETUP.
USER CONFIG. 1
VELOCITY ← * 500 mm/s →
PEN PRESSURE ← * 80 g → 1=TEST
SYSTEM SETUP
CONCATENATION ← * 0 →
SMOOTHING ← * OFF →
EMULATE ← * HPGL →
TOOL ← * TANG. KNIFE →
MENU UNITS ← * METRIC →
HPGL RESOLUTION ← * HIGH (0.01MM) →
**
ADDRESSING ← * .025 mm →
BAUD RATE ← * 9600 →
*
PARITY ← * NONE →
RTS/DTR ← * TOGGLE →
SPECIAL LOAD ← * OPOS →
MEDIA SENSOR ← * ON →
FRONT SENSOR ← * OFF →
PICK-UP ROLL ← * ON →
AUTOLOAD ← * ON →
CLEANING ← * MEDIUM →
TOOL COMMAND ← * ACCEPT →
LOAD ON W CMD ← * ON →
*
FLEX-CUT ← * OFF → 1=SETUP

* = in DM/PL ONLY
** = IN HP-GL and HP-GL/2 ONLY

FIGURE 2 - 3
FLOWCHART SHOWING FACTORY PRESET MENU SETTINGS

1.16. KNIFE PRESSURE

The KNIFE PRESSURE submenu is used to set or modify the cutting pressure of the knife.

The default knife pressure value is 120 grams.
The knife pressure can be set between 0 and 600 grams.
The knife pressure value is set in 5 gram increments.
On the LCD, the active knife pressure value is marked with an *.
Knife pressure setup is explained in detail in section 1.

1.17. PEN PRESSURE

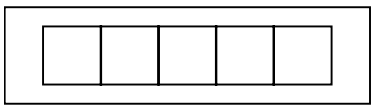
The PEN PRESSURE submenu is used to set or modify the pressure of the ball point pen.

The default ball point pressure value is 80 grams.
The pressure can be set between 0 and 600 grams in 5 gram increments.
On the LCD, the active pen pressure value is marked with an *.

1.18. KNIFE OFFSET

The KNIFE OFFSET submenu is used to set or modify the distance between the ***DRAG*** knife blade tip and the centre axis. This routine applies to a **drag knife only.**

The default drag knife offset value is .45 mm.
The value can be set between 0 and 1 mm.
Make sure that the selected knife offset value matches that of the knife. Some fine tuning may be necessary because of the mechanical tolerances on the knife. To verify the knife offset, a test can be cut by pressing the **1** key.
If the offset value is set too low, the rectangles will not close.
When the offset value is set too high, the rectangles will be distorted.
The offset test is illustrated below.



1.19. FIRING RATE

The firing rate submenu is used to set the speed of printing. When using ink types with a high viscosity it is advised to lower the firing rate to obtain a better print quality and a longer life time of the ink cartridges. Lowering the firing increases the time of printing.
The default firing rate is high.
The firing rate can be set to LOW, MEDIUM and High.

1.20. VELOCITY

The VELOCITY submenu is used to set or modify the velocity of the tool.
The default velocity is 500 mm/s (20 ips).
The velocity can be set between 50 mm/s (2 ips) and 600 mm/s (24 ips).

1.21. OVERCUT

The OVERCUT submenu enables you to generate an overcut in order to facilitate weeding the cut.

The default overcut is set to 1.
The overcut setting can be disabled (=0) or set to any value between 0(=off) and 10. One unit is about 0.1 mm or 0.004 ".
On the LCD, the active value is marked with an *.

1.22. SYSTEM SETUP

The SYSTEM SETUP submenu covers the menu items you normally only need when establishing the initial setup e.g. when you install the cutter in combination with the software you use.

Press the ✔ key to access the different submenu items, which are explained in section 2.4.

1.23. SYSTEM SET UP

Refer to Figure 2-3.

1.24. CONCATENATION

The CONCATENATION feature increases the speed and quality with which cut data having a very high resolution is cut. However when changing over to normal characters again, deactivate concatenation by setting this parameter to 0.
On the LCD, the active concatenation value is marked with an *.

1.25. SMOOTHING

The SMOOTHING feature helps to cut smoother curves when curve data with many short vectors is received from the computer.
The default setting is OFF.
On the LCD, the active setting is marked with an *.

1.26. EMULATE

The EMULATE submenu is used to select the active cutting/plotting language for the cutter.
The SummaPaint PC1500 supports HP-GL, HP-GL/2 and DM/PL.
On the LCD, the active plotting language setting is marked with an *.

> **NOTE**
>
> The active cutting/plotting language MUST match the cutting software.
>
> Always select a language which is supported by the host computer's cutting software.

Select the HP-GL menu option to set the active cutting/plotting language to HP-GL. The cutter will emulate an HP model 758xB plotter (with selectable origin, see 2.4.12).

Select the DM/PL menu option to set the active cutting/plotting language to Houston Instrument Digital Microprocessor/Plotting Language (DM/PL). This selection will allow the cutter to operate with DM/PL-based cutting / plotting software. This language, having special command extensions for cutting, normally gives superior cutting performance.

1.27. TOOL

The TOOL sub-menu is used to select the default tool at power up.
To configure the cutter for TANGENTIAL KNIFE cutting operations, select the TANG. KNIFE option.
To configure the cutter for PLOTTING operations, select the BALL POINT option.
To configure the cutter for DRAG KNIFE cutting operations, select the DRAG KNIFE option.
To select a tool other than the default one temporarily, see section 2.1.11.

1.28. MENU UNITS

The MENU UNITS submenu allows you to select English or metric menu units for DM/PL.

For models sold in the US, English units are the default setting.
For models sold in Europe, metric units are the default setting.
On the LCD, the active menu units setting is marked with an *.

1.29. HPGL RESOLUTION

The HPGL RESOLUTION sub-menu is used to select the cutter's default HPGL user-addressable cutting resolution.
The default addressing resolution is HIGH (0.01 mm) .
The user-addressable resolution can be set to NORMAL (0.025 mm) or HIGH (0.01 mm).
On the LCD, the active resolution value is marked with an *

1.30. ADDRESSING

The ADDRESSING submenu is used to select the cutter's default DM/PL user-addressable cutting resolution.
The default addressing resolution is 0.025 mm (Europe) or 0.001" (US).
The user-addressable resolution can be set to 0.025 mm or 0.001" or 0.1 mm or 0.005".
On the LCD, the active resolution value is marked with an *

1.31. BAUD RATE

The BAUD RATE submenu is used to set or modify the operating baud rate for RS-232-C serial communications between your cutter and the host computer.

The default baud rate is 9600 bps.
The baud rate can be set to any of the following values: 2400 bps, 4800 bps, 9600 bps, 19200 and 38400 bps.
On the LCD, the active baud rate value is marked with an *.

NOTE

The baud rate setting of your cutter MUST match the host computer's baud rate setting.

1.32. PARITY

The PARITY sub-menu is used to set or modify the byte format and parity type for RS-232-C serial communications between your cutter and the host computer.

The default parity setting is bit 8 = 0 (8 data bits, no parity, the 8th bit being a low bit). The parity can be set to any of the following values:

LCD information	Parity setting	Remarks
NONE	8 data bits, no parity	bit 8 = low (0)
MARK	8 data bits, no parity	bit 8 = high (1)
EVEN	7 data bits, 1 parity bit	parity bit = even
ODD	7 data bits, 1 parity bit	parity bit = odd

On the LCD, the active parity setting is marked with an *.

NOTE

The parity setting of your cutter MUST match the host computer's parity setting.

1.33. RTS/DTR

The RTS/DTR submenu controls the Request To Send (RTS) and Data Terminal Ready (DTR) signals of the cutter's RS-232-C serial communications interface for hardware handshaking.

The RTS/DTR default value is TOGGLE.
RTS/DTR can be set to TOGGLE (hardware handshaking) or HIGH (software handshaking).
On the LCD, the active handshaking setting is marked with an *.

1.34. special load

The special load submenu is used to determine which alignment procedure is used when activating the special load procedure (see section 1). By using the the special load procedure, a contour cut can be done on a preprinted sign. On the LCD the active value is marked with an *.
The default setting is OPOS.
The SPECIAL LOAD can be set to X-AXIS ALIGN, XY-AXIS ALIGN, XY-ADJUSTMENT and OPOS.

1.35. MEDIA SENSOR

The MEDIA SENSOR sub-menu is used to activate or deactivate the media sensors. On the LCD, the active setting is marked with an *.
The sensors detect whether media is loaded or detect the end of media. The sensors prevent damage to the cutting strip and knife tip.

1.36. Front sensor

The FRONT SENSOR sub-menu is used to activate or deactivate the front media sensors. On the LCD, the active setting is marked with an *.
The front sensors detects the front edge of the media. Disabling the front sensors prevents that the media is pulled back in the loading sequence. This is necessary when the pick-up roll is used.

1.37. PICK-UP ROLL

The PICK-UP ROLL sub-menu is used to activate or deactivate the pick-up roll. When using sheets or when you simply do not want to use the pick-up roll you can switch it off. The default setting is ON.
On the LCD display, the active setting is marked with an *.

1.38. autoload

The AUTOLOAD option enables the user to the change the vinyl unroll proceedings. When AUTOLOAD is ON , the PC1500 will automatically unroll the media when needed. When the AUTOLOAD option is OFF, the operator himself should unroll enough media before starting to cut.
The default setting is ON. Best results and performance are usually guaranteed when using this setting.
On the LCD display, the active setting is marked with

an *. When using weak or soft materials, e.g. canvas, better results are achieved when autoload is off.

1.39. cleaning

The CLEANING sub-menu is used to set the cleaning frequency of the cleaning procedure.
While printing, the print carriage moves periodically to the service station to clean the print heads and to spit some ink out of all its nozzles to prevent the nozzles from blocking. It is advised to set the cleaning as low as possible to work faster and save ink. In this way the reservoirs of the service station can be used longer before they need to be cleaned (see section 3).
However, if the cleaning frequency is too low, the nozzles will block.
The default setting is MEDIUM.
Cleaning can be set to OFF, LOW, MEDIUM and HIGH.

1.40. TOOL COMMAND

The TOOL COMMAND is used to determine whether the DM/PL and HP-GL pen/knife-select commands (the P and SP commands respectively) are ignored or accepted.
When the TOOL COMMAND option is set to "ACCEPT", the P or SP commands will change the selected tool in the cutter according to the suffix that follows the pen/knife command. The cutter's LCD will, e.g. prompt the user with the following message: "INSERT PEN" when a P2 command is sent.
When the TOOL COMMAND option is set to "IGNORE", the pen/knife commands are ignored.
On the LCD, the active setting is marked with an *. The default setting is "ACCEPT".

1.41. LOAD ON W COMMAND

The LOAD ON W CMD submenu will only be displayed if the PLOT LANGUAGE is set to DM/PL (See Paragraph 2.1.26.). The LOAD ON W CMD determines, when receiving the DM/PL Window-command (W-command), whether aside from the scaling function, media is loaded or not. Besides scaling, the W-command is also very useful when cutting long signs. With the W-command, media loading will go smoother. Sufficient media will be pulled off the roll at once. Even when AUTOLOAD is off, there is no need anymore to unroll the media manually.

1.42. FLEX-CUT

FLEX-CUT can be set to OFF, to Mode 1 or Mode 2. When the cutter is set to mode 1 or mode 2, it will alternately cut one length with full pressure, and one length with reduced pressure. The feature FLEX-CUT offers the advantage that it cuts completely through the material, yet allowing the material to stay together by means of the small media bridges.

MODE 1 is the quickest mode, but it is less precise because the pressure changes during the cutting. MODE 2 is a lot slower, but at the same time it is much more precise, as the cutter stops at every change of pressure. Pressing the **1** key will activate the configuration menu, which allows you to set the cutting pressure and the cut length.

1. CUT LENGTH

This parameter determines the length that is cut with full pressure. By pressing the **1** key, the FLEX-CUT test pattern will be cut.

2. FLEX-CUT LENGTH

This parameter determines the length that will be cut with reduced pressure or without pressure. By pressing the **1** key, the FLEX-CUT pattern will be cut.

3. FLEX PRESSURE

This parameter determines the pressure of the FLEX-CUT LENGTH. By pressing the **1** key, the FLEX-CUT test pattern is cut.

1.43. INTERNAL TEST MENU

➔ To access any internal test, proceed as follows:

1. Power the machine on.
2. Load cutting or printing media.
3. Install a knife or a pen.
4. Press the Menu key until INTERNAL TEST is displayed and press the ▽ jogging key.
5. Press the ▽ or △ jogging key until the desired internal test is displayed.
6. To perform the test, press the ✔ key.

To exit from this menu and go to another menu, press the Menu key until the desired menu is displayed.

To exit from the menus and put the cutter on line again, press the key.

Figure 2 - 4 shows the different INTERNAL TEST submenus.

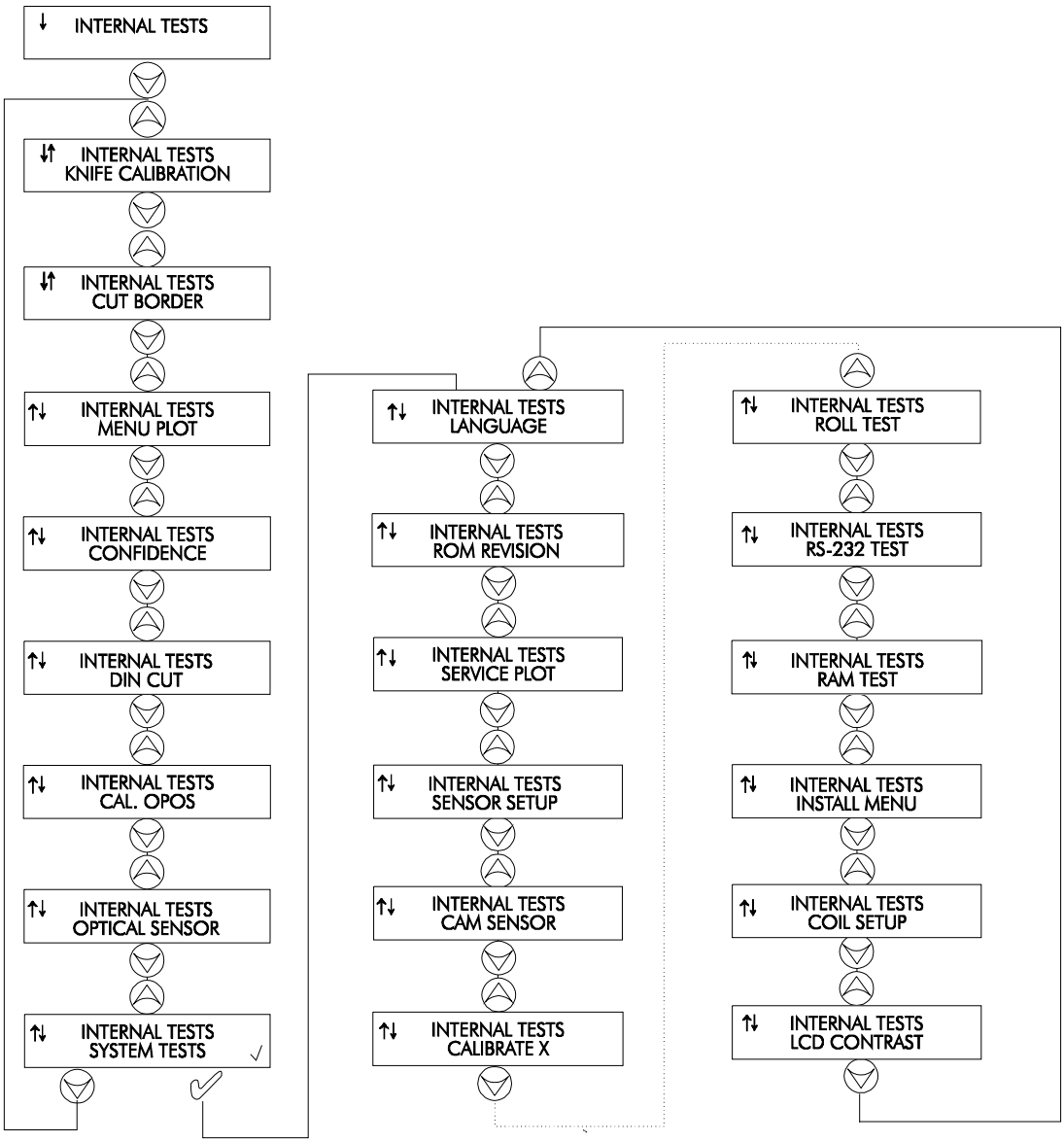


FIGURE 2 - 4
INTERNAL TESTS SUBMENUS

1.44. TANG. KNIFE CALIBRATION

The purpose of the knife calibration routine is to detect and, if need be, to correct problems related with the concentricity of the TANGENTIAL knife blade. This routine should only be run when required. When noticing cut quality problems with a new knife, perform a knife calibration test as described in the following paragraphs.

During the knife calibration routine, the cutter will cut a series of test patterns which will allow you to identify errors in knife rotation and concentricity. Corrective measures can be taken using the control panel keys.

Knife calibration errors may be due to any of the following causes (see Fig. 2-5):

- **Concentricity misalignment**. The knife tip is slightly rotated in relation to its theoretical 0° angle. This error can be corrected by means of the ADJUST ORIGIN test routine.

- **Horizontal misalignment**. The knife tip deviates from its theoretical longitudinal centre. This error can be corrected by means of the ADJUST LONG. test routine.

- **Vertical misalignment**. The knife tip deviates from its theoretical lateral centre. This error can be corrected by means of the ADJUST LAT. test routine.

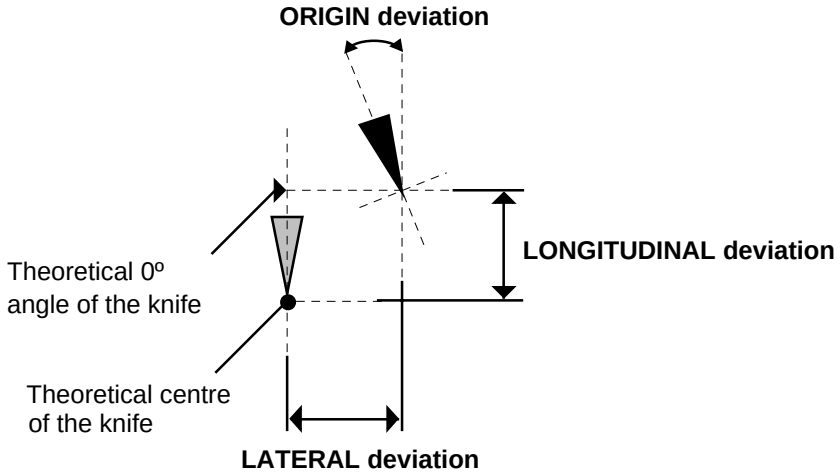


FIGURE 2 - 5
POSSIBLE KNIFE CALIBRATION GROUNDS

The calibration settings entered during the knife calibration routine are automatically stored in the machine's memory and will be maintained after power down.

NOTE

Prior to knife calibration, load vinyl and install a knife to avoid damage to the cutting strip.

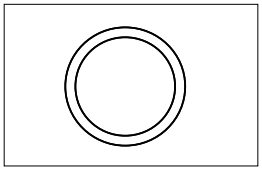
1.45. ADJUST ORIGIN test routine

↓ INTERNAL TESTS
↑ CALIBRATE KNIFE

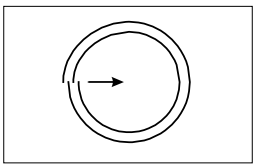
Press ✔ to select the ORIGIN test.

ADJUST ORIGIN
↑↓ 0

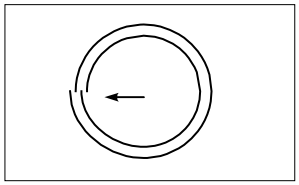
Press ✔ to execute the ORIGIN test.



This is the correctly cut test pattern.



Weed out the ring and compare the circle pattern cut in the vinyl with the circle pattern illustrated above. If you obtained this kind of pattern, increase the value displayed on the LCD by pressing the jogging key to correct closing of the circles cut. To repeat the test, press the ✔ key.
Press the Menu key to go to the next step of the calibration procedure



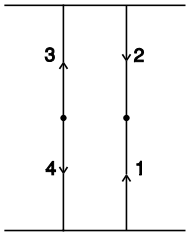
However if you obtained the kind of pattern illustrated above, then, decrease the value displayed on the LCD by pressing the jogging key to correct closing of the circles cut.

To repeat the test, press the ✔ key.
Press the Menu key to go to the next step of the calibration procedure

1.46. ADJUST LAT. TEST ROUTINE

```
ADJUST LAT
↑↓ 0                    1
```

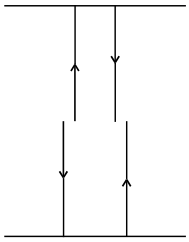
Press ✔ to execute the LAT test.



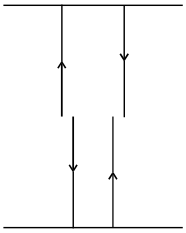
1 runs from the horizontal line at the bottom to the centre.
2 runs from the horizontal line at the top to the centre.

3 runs from the centre to the horizontal line at the top.
4 runs from the centre to the horizontal line at the bottom.

Carefully check the alignment of the different cuts: the two vertical lines should meet seamlessly precisely in the middle, without any gaps.



Weed out the rectangle and if you obtained the kind of pattern illustrated above, decrease the value displayed on the LCD by pressing the ◁ jogging key to correct closing of the lines cut.
To repeat the test, press the ✔ key.
Press the Menu key to go to the next step of the procedure.



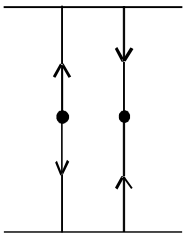
However, in case your cut resembles the pattern illustrated above, increase the value displayed on the LCD by pressing the ▷ jogging key to correct closing of the lines cut.
To repeat the test, press the ✔ key.

A complementary test has been added to fine tune the LAT. adjustment.
Press the **2** key to perform the vertical test shown above. All the squares should be identical.
Press the Menu key to go to the next step of the procedure.

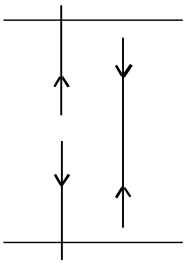
1.47. ADJUST LONG. test routine

```
ADJUST LONG
↑↓ 0                    1
```

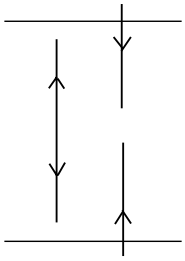
Press ✔ to execute the LONG test.



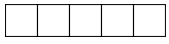
The test pattern is similar to the LAT-test.
Check the quality of the cuts: the end of the vertical cuts should coincide precisely with the horizontal cuts, without any gaps.



Weed out the rectangle and if you obtained a pattern as illustrated above, decrease the value displayed on the LCD by pressing the jogging key to correct closing of the lines cut.
To repeat the test, press the ✔ key.
Press the Menu key to repeat the calibration procedure or press the key to interrupt the routine.



However, if you obtained a pattern as illustrated above, increase the value displayed on the LCD by pressing the jogging key to correct closing of the lines cut.
To repeat the test, press the ✔ key.
Press the Menu key to repeat the calibration procedure or press the key to interrupt the routine.



A complementary test has been added to fine tune the LONG. adjustment.
Press the **1** key to perform the horizontal test; all the squares should be identical.

1.48. CUT BORDER

The CUT BORDER sub-menu is used to cut the border of the media area which was defined during the load sequence. This function is particularly useful if you want to verify the exact cutting area.

1.49. MENU PLOT

The MENU PLOT is a hard copy of the present machines configuration, i.e. the items selected in the USER CONFIG sub-menus described in Section 2.3. The plot is organised by menu categories to show the current values for the various USER CONFIG 1(->4) configurations. To run this plot, load a sheet of plotting paper and install a pen.

NOTE

It is strongly recommended to produce a MENU PLOT hard copy each time you alter the cutter configuration. The resulting plot should be kept with the machine's documentation in order to provide other users with details of the actual configurations of the unit.

1.50. CONFIDENCE cuT

The CONFIDENCE cut performs an electrical and mechanical test of the cutter to make sure that the cutter is fully operational. A media sheet of at least A3/A- size should be used for this plot.

1.51. DIN CUT

The DIN CUT also performs an electrical and mechanical test of the cutter, in order to check the cut quality, but also provides the user with feedback on knife setting, knife pressure, knife offset and cutting depth.

This cut is always run as a DIN A4 portrait/A-size image, regardless of the actual size of the media loaded. If the media loaded is smaller than DIN A4/A-size, part of the outer box will be clipped (not cut). This cut is always executed in the sequence prescribed by the ISO DIN standard.

1.52. CALIbration OPOS.

The CALIBRATION OPOS sub-menu is used to calibrate the OPOS (Optical positioning system).
This calibration is normally done in the factory. When the system is no longer working precisely a calibration test must be performed. Calibration allows to fix the exact distance between the knife tip and the sensor.

⇒ To calibrate the optical system, proceed as follows:

1. Power up the unit and load a piece of black vinyl with a white backing. The load procedure is described in section 1.

2. Set the origin on a clean, blank part of the vinyl. Defining the origin is described in section 1.

3. Press the key (MENU) key until the message 'INTERNAL TEST' is displayed on the LCD.

↓ INTERNAL TESTS

4. Press the jogging key until the message ' CAL OPOS' is displayed.

↓ INTERNAL TESTS ↑ CAL. OPOS

Press the ✔ key to confirm the selection.

The cutter will now cut out a rectangle.

5. The message 'WEED RECTANGLE' will appear on the display:

WEED RECTANGLE PRESS MENU

Weed carefully with tweezers the rectangle cut and press the Menu key.

The cutter will now measure the rectangle and set its calibration parameters.

1.53. Optical sensor

The OPTICAL SENSOR option is a useful routine to check whether or not OPOS sensor is functioning properly. If the sensor is placed on black the sensor output should be High (above 1500). If the sensor is placed on white the sensor output should be low (below 700).

1.54. SYSTEM TESTS

The SYSTEM TESTS sub-menu covers the menu items you only occasionally need to adjust .

Press the **ENTER** key to access the different sub-menu items which are explained in section 2.6 below.

1.55. SYSTEM TESTS

The SYSTEM TESTS menu is a special set of procedures which are not required for normal cutter operation. Field service personnel, however, will use the SYSTEM TESTS menu occasionally. When in SYSTEM TESTS, the cutter is fully operational and performs as described in this manual.

1.56. LANGUAGE

The MENU LANGUAGE sub-menu is used to set or modify the dialogue language on the LCD. Press the ⟨△⟩ or ⟨▽⟩ jogging key until the desired language is displayed on the LCD and press ✔ to confirm. The information on the LCD can be displayed in English, French, German, Dutch, Spanish or Italian.

1.57. ROM REVISION

Selecting the ROM REVISION option, by pressing the ✔ key will furnish the details on the cutter's ROM revision. This information is often helpful to technicians when diagnosing problems over the telephone.

1.58. SERVICE PLOT

The SERVICE PLOT provides information about the cutter, which is helpful when requesting service for your cutter. The SERVICE PLOT is always plotted at the same size and should be performed with a pen on paper.

The plot shows the cutter model number, the revision numbers of the installed ROM (Read Only Memory) circuits, the selected baud rate, the resolution and buffer (memory) size.

CAUTION

The following test routines are normally restricted to CalComp's Field Service Personnel.

1.59. SENSOR SETUP

The SENSOR SETUP option is a useful routine to check whether or not the front and rear media sensor are functioning properly and whether the switching levels of these sensors are correctly set.

1.60. CAM SENsOR

The OPTICAL SENSOR option is a useful routine to check whether or not the cam sensor is functioning properly. The cam sensor is the sensor mounted to the cut carriage. This sensor senses the location of the pinch rollers.

1.61. CALIBRATION

CALIBRATION allows to adjust the length of the lines cut, within the specifications.
For instance, if a cut line should measure 100 mm exactly, the cutter can be adjusted for any discrepancy.

1.62. ROLL TEST

The ROLL TEST option is a useful routine to check whether the pick-up roll and the pick-up sensor are functioning properly or not. The pick-up roll can be activated by means of the arrow keys

1.63. RS232 TEST

The RS232 TEST routine verifies the unit's RS-232-C serial communications (transmit data, receive data, and hardware handshaking) circuits. This test does not require pen, knife or media to be loaded.

1.64. RAM TEST

This test completely checks the RAM bit by bit.
When running this test the unit will not respond. After this test, power the unit off, then on again.

1.65. INSTALL MENU

The INSTALL MENU routine restores the factory-defined menu settings in all four USER CONFIG menus. This test routine can be performed without a tool and without media.

1.66. COIL SETUP

This test is used to calibrate knife and pen pressure and to set the knife and pen "landing".
After adjustment, the value is saved in the system's non-volatile RAM.
To execute this test a tension gauge of ± 100 gr and ± 500 gr is required.
In the upper line of the display the desired pressure appears and in the bottom line of the display the value that has to be sent to the head to reach this pressure (this value is between 0 and 127).

1.67. LCD CONTRAST

The LCD CONTRAST submenu is used to adjust the contrast (or intensity) of the liquid crystal display on the control panel.
Press the or jogging key to increase or reduce the contrast and press ✔ to confirm.

1.68. printer settings

➔ To access any printer setting, proceed as follows:

1. Power the machine on.
2. Load printing media.
3. Install the ink cartridges and a knife or a pen .
4. Press the Menu key until PRINTER SETTINGS is displayed and press the ▽ jogging key.
5. Press the ▽ or △ jogging key until the desired printer setting is displayed.
6. To perform the test (if available) press the **1** key.
7. To change parameters (if available), press the ✔ key.

To exit from this menu and go to another menu, press the Menu key until the desired menu is displayed.

To exit from the menus and put the machine on line again, press the key.

Figure 2-6 shows the different PRINTER SETTINGS sub-menus.

NOTE

The printer settings are not related to the user configurations. (For all four user configurations the same values are used.)

Note

All the tests described further in this section can also be activated through the SummaPaint Control program. To install this program read the readme.txt file on the installation disk.

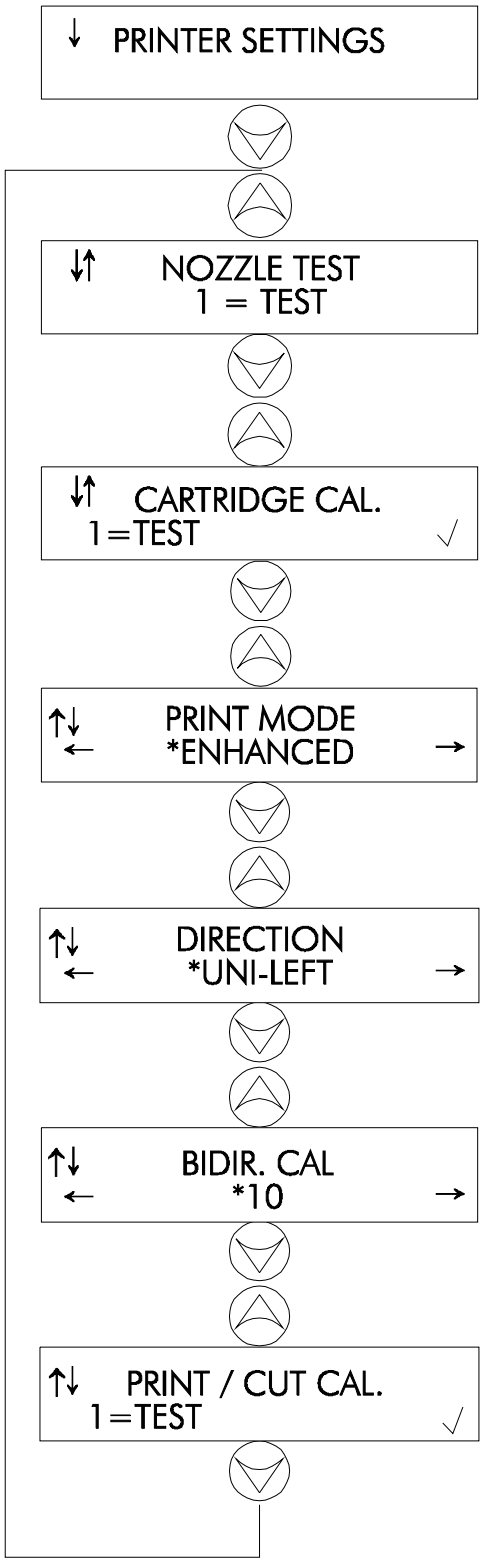
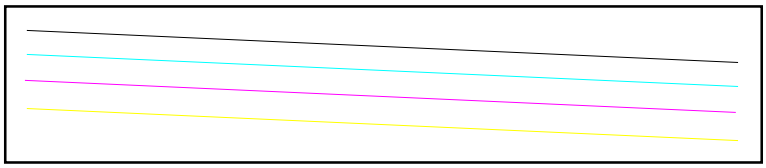


FIGURE 2 - 6
PRINTER SETTINGS

1.69. NOZZLE TEST

To make sure that all nozzles of the 4 cartridges are working properly, do the NOZZLE TEST.

Press the **1** key to perform a nozzle test as illustrated in the figure below.



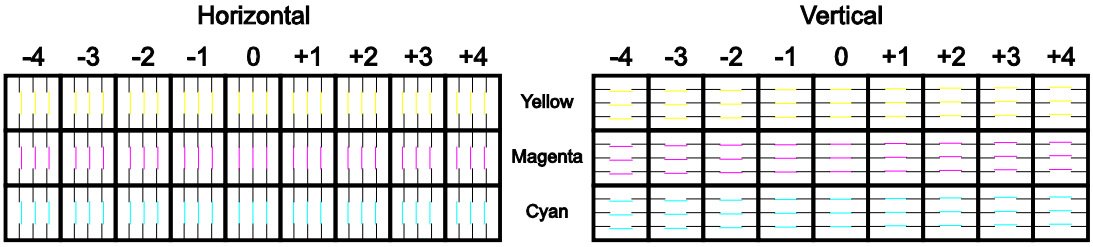
NOZZLE TEST PATTERN

When all nozzles are working fine, the four slanting lines will be continuous. If one color line is interrupted, one ore more nozzles will be blocked. Repeat this test a second time. If some nozzles are still blocked, the cartridge needs to be cleaned (see section 3).

1.70. cartridge cal.

The CARTRIDES CAL(ibration) aligns the cartridges.

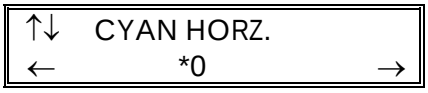
Press the **1** Key to perform a color calibration test as illustrated below:



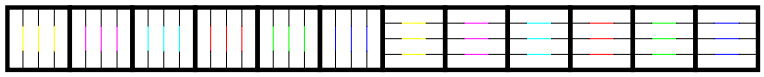
After printing the color calibration test you can change the values for the horizontal and vertical offset of the printed color with reference to the black.

Select again 'COLOR CAL.'

Press the ✔ key to change the color calibration parameters.



Examine the horizontal and vertical tests carefully. Verify per row in which square the colored lines are in a direct line with the black lines. The value figuring on top of the corresponding column is the value that has to be entered. Press the and jogging keys to change the value. Press the ✔ key to confirm the selection (an * appears in front of the value). Press the and jogging keys to switch between the different parameters. After changing the values a final test can be done by pressing the **1** Key.

Result : 

1.71. print mode

The PRINT MODE sub-menu is used to set print mode.
The PRINT MODE default value is ENHANCED.
PRINT MODE can be set to ENHANCED or DRAFT.
The draft mode is fast but can only be used for line drawings or technical drawings. For printing pictures the enhanced mode should always be used.

1.72. direction

The DIRECTION sub-menu determines during which print-carriage movement the machine actually prints.
The default setting is UNI-LEFT.
DIRECTION can be set to UNI-LEFT, UNI-RIGHT and BI-DIRECTIONAL.
UNI-LEFT : Printing takes place while the carriage moves to the left.
UNI-RIGH : Printing takes place while the carriage moves to the right.
BI-DIRECTIONAL: Printing takes place while the carriage moves to the left and also when it moves to the right. The BI-DIRECTIONAL mode is fast but requires an additional calibration (see 2.1.73).

1.73. Bi-dir CAL

The BI-DIR(ectional) CAL(ibration) aligns the left and right printing movements to each other in order to print bi-directional.

In line drawings the result of the bi-directional calibration can easily be seen.
Examine whether the lines are smooth. If the lines are not in a direct line then the bi-directional value has to be changed.

The values can be changed by pressing the and jogging keys. Press the ✔ key to confirm the selection (an * appears in front of the value).

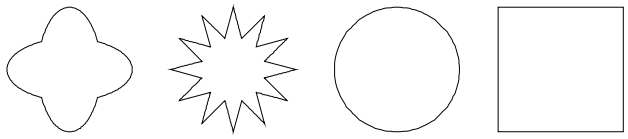
NOTE

When using the SummaPaint Control program, a special test can be activated to do the bi-directional calibrating test.

1.74. print / cut cal.

The PRINT / CUT CAL. calibrates the position of the four cartridges in relation to the cutting head.

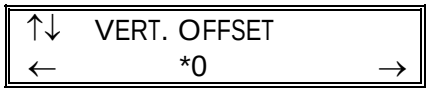
Press the **1** Key to perform a Print and Cut calibration test as illustrated below:

Result : 

After printing the Print and Cut calibration test you can change the values for horizontal and vertical offset.

Select again 'PRINT / CUT CAL.'

Press the ✔ key to change the vertical offset.



Press the ◁ and ▷ jogging keys to change the value. The value must correspond with the number of dots the printed part has to move so that printed and cut lines are exactly the same. Moving upwards increases the parameter, moving downwards decreases the parameter. Press the ✔ key to confirm the selection (an * appears in front of the value). Press the ▽ and △ jogging keys to switch to the horizontal offset.

Press the ◁ and ▷ jogging keys to change the value. The value must correspond with the number of dots the printed part has to move so that printed and cut lines are exactly the same. Moving to the left increases the parameter, moving to the right decreases the parameter. Press the ✔ key to confirm the selection (an * appears in front of the value).

After changing the values a final test can be done by pressing the **1** Key.

SECTION 3

GENERAL INFORMATION

1.75. MAINTENANCE & cleaning

The SummaPaint PC1500 has a number of sliding surfaces made of smooth metals and plastics. They are virtually friction-free and require no lubrication. They will, however, collect dust, which may affect the performance of the machine. Keep the SummaPaint PC1500 as clean as possible by using a dust cover. When necessary, clean the unit with a soft cloth dampened with isopropyl alcohol or mild detergent. Do not use abrasives.

1.76. Cleaning the service station.

NOTE

When the machine is used intensively it is obliged to clean the service station daily.

The service station contains ink reservoirs. The head will spit in these reservoirs periodically to prevent the nozzles from blocking. If the service station is not cleaned regularly, the ink will overflow and cause difficulties.

➔ To clean the service station, proceed as follows:

1. Power on the unit. Make sure that the media is properly loaded.
2. When the unit is 'Online' press the key. The print carriage will move beside the service station. Every three seconds a beep will warn you that the print carriage is not in the service station.

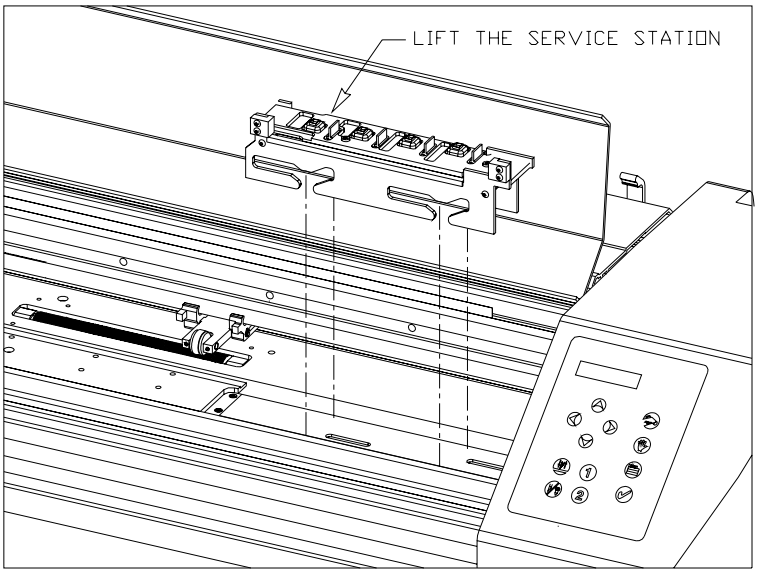


FIGURE 3 - 1
CLEANING THE SERVICE STATION

3. Lift the service station and move it a little so that it comes free from the machine body.

4. First hold the complete service station in a tank of water. This will allow most of the ink to flow away. Then clean the service station more carefully with a soft dampened cloth.

CAUTION

Consult your local Authority for regulations regarding the waste of used water.

5. Dry the service station as well as you can to prevent corrosion.

6. Place the service station back in place.

7. Move the service station as far as possible to the left.

8. Press on any key so that the print carriage moves back.

1.77. cleaning cartridges

When a cartridge has blocked nozzles, try the following suggestions to make them work again. Repeat the first suggestion a few times before trying the other suggestions.

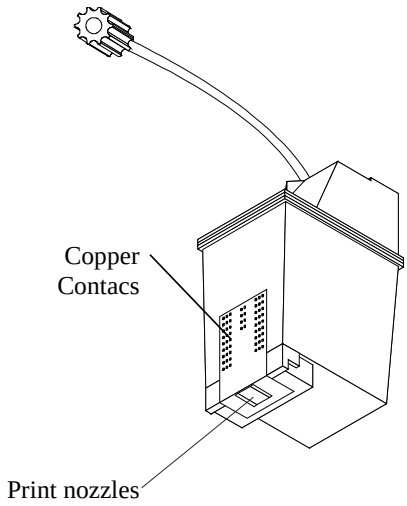


FIGURE 3 - 2
CLEANING INK CARTRIDGE

- Clean the nozzles with a soft dampened cloth. Pressing the sides of the cartridge will force ink to come out of the nozzles. Do this while holding the print nozzles downwards.
- Clean the copper contacts of the cartridge with a soft cloth.
- Clean the copper contacts of the print carriage with a soft cloth.
- To find out whether a cartridge is not working properly anymore due to blocked nozzles or bad contacts, switch two cartridges from place and repeat the prime test.
- If the cartridge is still not working fine, force some ink to come by pumping air in the ink bottles with the prime bulb while printing. However, do not do this when printing final pictures. The cartridge could start leaking for a while.
- If the cartridge is still not working fine, place it on top of a wet (destiled water)cloth during a few minutes so that the water has time to dissolve the blocked nozzles.
- Use evacuation tool that came with the accessories (see section 3.1.4).
- If the cartridge is still not working fine, immerse the nozzles in an ultrasonic bath for about 15 seconds.
- Hold the print head above steaming water for about 30 seconds.

1.78. Cleaning the tubes

NOTE

It is advised to clean the tubes :

- when a set of tubes has not been used for a couple of days.
- weekly or monthly, depending on the type of ink. When using pigmented ink a weekly flush will prevent clogging.

➔ To clean the tubes, proceed as follows:

1. Remove the cartridges as described in section 1.

2. Connect the prime bulb to the connector on the print carriage, and open the clips nearby the ink bottles.

3. Blow all the ink back into the bottle.

4. Close the clips and disconnect the ink bottles. Place the ink bottle and the bottle support away from the machine. Disconnect the prime bulb.

5. Fill the syringe with destilled water. Use cleaning tool to catch water.

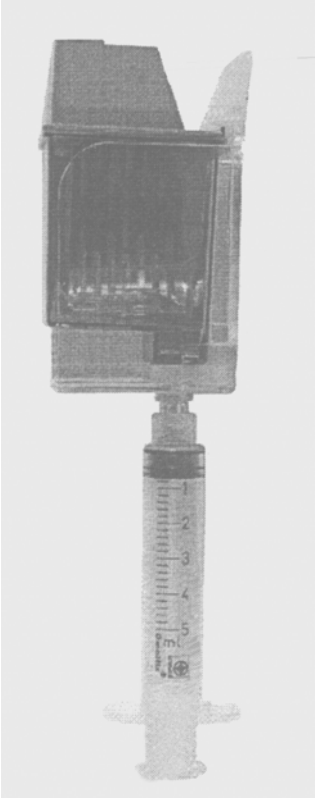
6. Connect the syringe to the print carriage and flush the tubes with the water. Repeat steps 5 and 6 several times if necessary.

7. If the tubes will not be used in the first few days, close the tubes on both sides and proceed with step 8 at the moment you are going to use the tubes again. Otherwise proceed with step 8 now.

8. Connect the prime bulb to the print carriage and remove all the water by pumping air through it.

9. Refill the tubes with ink (See Section 1).

1.79. EVACUATION TOOL



CAUTION
BEFORE USING THIS TOOL MAKE SURE TO WEAR PROTECTIVE CLOTHING IN ORDER NOT TO GET INK STAINS ON YOUR CLOTHING.

If the cartridges are blocked or if the micro chamber is less then half full, then use this special tool.
Simply put the cartridge in the holder and pull gently on the syringe until ink comes in the syringe. If the micro chamber is less then half full, then **very gently** push the ink back into the micro chamber. **DO NOT PUT TO MUCH PRESSURE ON THE SYRINGE. DO NOT TRY TO PUT ALL THE INK BACK INTO THE MICRO CHAMBER THIS WILL BREAK THE SEAL AND DESTROY THE EVACUATION TOOL.**
Wait until the pressure in the cartridge and micro chamber are stable. Then remove the cartridge from the holder and put it back on the machine.
Excess ink in the syringe can be returned in the bottles on the tray.
Clean the tools carefully after each in order not to mix ink colors.

1.80. CLEANING THE drive sleeves

After a time, the sleeves of the drive drum may become clogged with accumulated residue from the media. This situation may affect the traction as the media will tend to slip between the pinch rollers and the drive sleeves.

➔ To clean the drive sleeves, proceed as follows:

1. First disable the sensors by covering them, or via the configuration menu (see 2.4.12 Media Sensor).

2. Place the cutter in local operation. (See Section 2.2.2.) Local operation will allow you to use the control panel jogging keys, even when no media is loaded.

3. Remove the backing from a piece of vinyl. Place the vinyl with the tacky side down between one of the pinch rollers and a drive sleeve. Lower the pinch roller arm.

4. Use the ⏃ and ⏚ jogging keys to move the piece of vinyl backward and forward several times, until all residue is removed from the drive sleeves.

5. Raise the pinch roller arm and remove the piece of vinyl.

6. Repeat steps 3 through 5 for the other drive sleeves.

7. Set the machine's power switch to OFF.

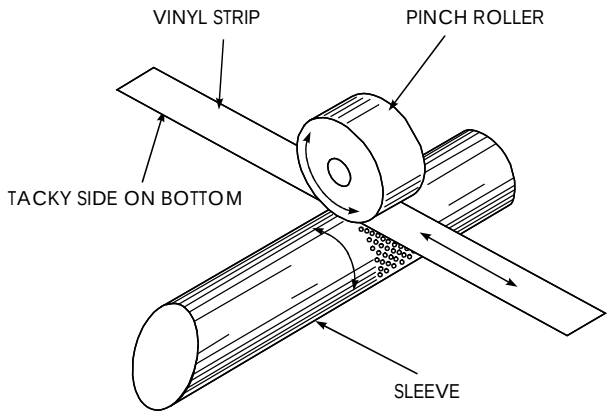


FIGURE 3 - 3
CLEANING OF THE DRIVE SLEEVES

1.81. cleaning the sensors.

After a certain time, the sensor may become dirty with accumulated residue from the media. This situation may cause malfunctioning of the unit.

➔ To clean the sensor area, proceed as follows:

1. The sensors are located on the machine's right side. One sensor is located on the front platen, the other sensor is located on the rear platen.

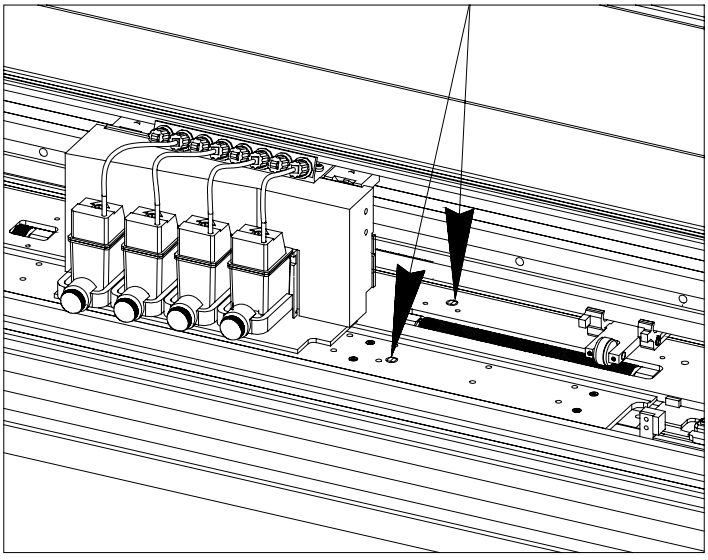


FIGURE 3 - 4
LOCATION OF THE SENSORS

2. To keep the sensors clean, it is sufficient to wipe them out now and then with a cotton swab.

1.82. Cleaning the nose piece.

The nose piece may become dirty with accumulated residue from the vinyl, which will result in poor cut quality.

➔ To clean the nose piece, proceed as follows:

1. Gently take out the knife or ball-point pen by turning the knife holder anticlockwise.
2. Observe the orientation of the nose piece first and then push it out of its holder.
3. Remove any remaining vinyl residue using a brush or a pair of tweezers.
4. Place the nose piece back.
5. Install the knife or ball-point pen holder as described in section 1.10.

1.83.

1.84. Cleaning the Y-guiding.

After a certain time, the y-guiding may become dirty with dust and accumulated residue from the carriage wheels. This may lead to bad printing and bad cutting quality.

➔ To clean the y-guiding, proceed as follows:

1. Set the machine's power switch to OFF, and open the safety cover.
2. The Y-guiding is the guiding on which the two carriages (print en cut carriages) are moving.

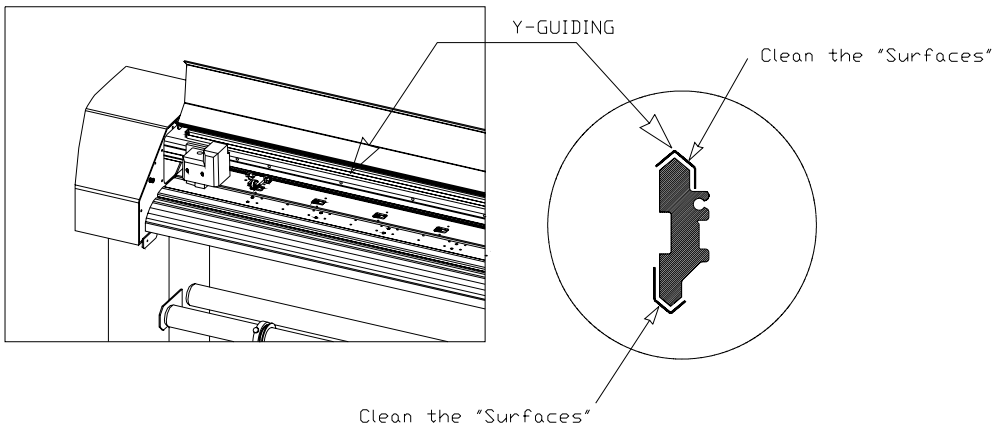


FIGURE 3 - 5
CLEANING THE Y-GUIDING

3. Clean the surfaces that are under a 45 degree angle with a soft cloth (both on top and underneath).
4. Move the carriages manually so that you can clean the complete guiding.

1.85. Cleaning the Encoder strip

After a certain time, the encoder strip may become dirty, which may cause the drawing to shift while printing.

CAUTION

The encoder strip is an essential and very fragile part. Handle it with extreme care.

➔ To clean the encoder strip, proceed as follows:

1. Set the machine's power switch to OFF.
2. Open the safety-cover partly with one hand, and reach with the other hand under the safety cover to open the top cover.

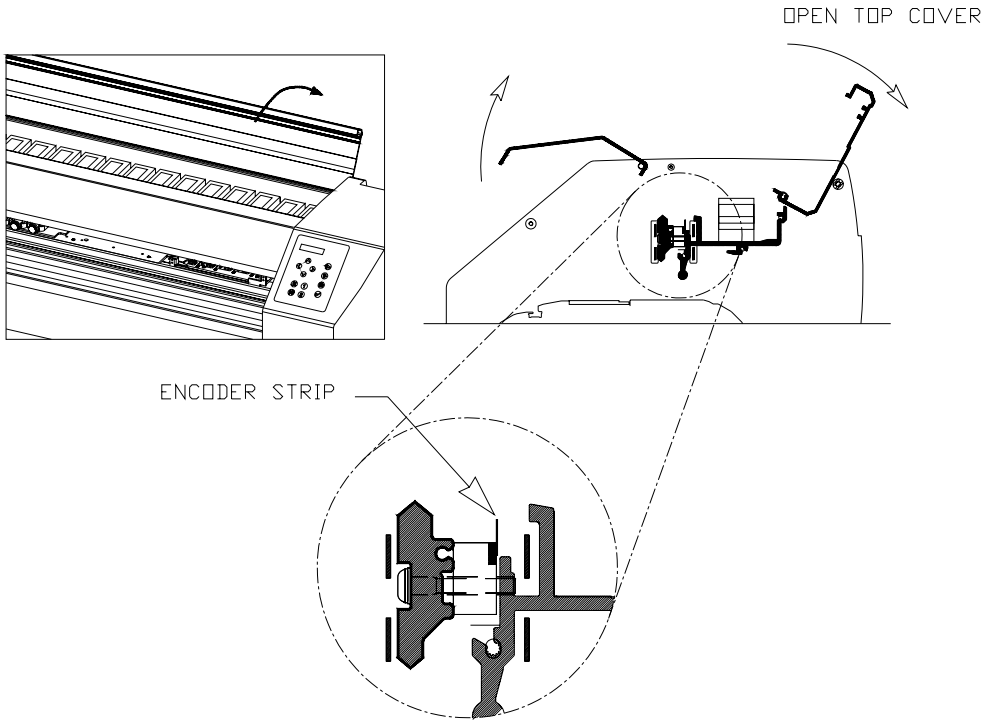


FIGURE 3 - 6
CLEANING THE ENCODER STRIP

3. The encoder strip is situated about 2,5 cm (1") behind the Y-guiding (see 3.1.83).
4. Clean both sides of the strip extremely carefully with a soft cloth.

Move the carriages manually so that you can clean the complete strip.

1.86. CLEANING the OPOS SYSTEM.

The optical system will collect dust. It is therefore advised to clean the sensor regularly with a cotton bud. The sensor has a small hole so that it can be cleaned easily.

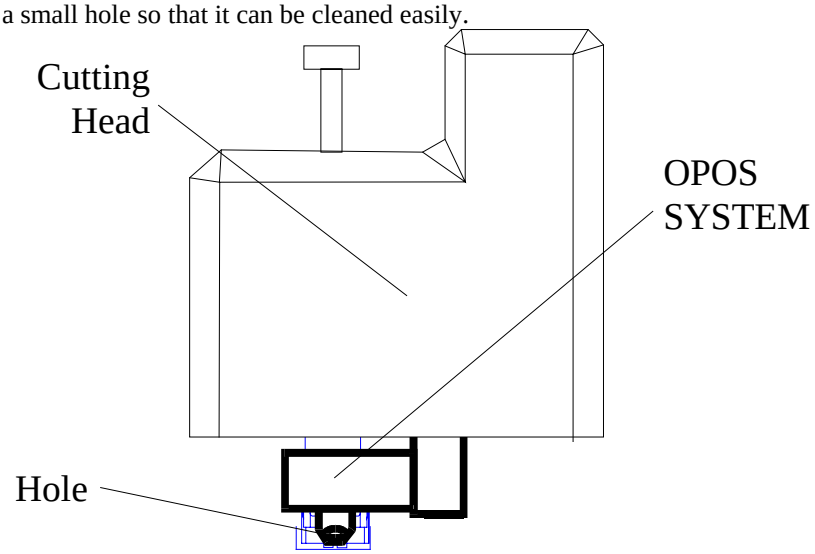


FIGURE 3 - 7
CLEANING THE OPOS SYSTEM

1.87. Operating voltage conversion

Before operating the machine for the first time it is advised to check the fuse rating for security reasons.

To check the fuse(s), remove the fuse(s) from the fuse box behind the cover plate of the power entry module. Changing to another operation voltage also implies a change of the fuse rate.

For 100 or 120 V AC operation, use only T 4 A,250V fuses, 5 x 20 mm (MF9004).
For 220 or 240 V AC operation, use only T 2 A,250V fuse, 5 x 20 mm (MF9003).

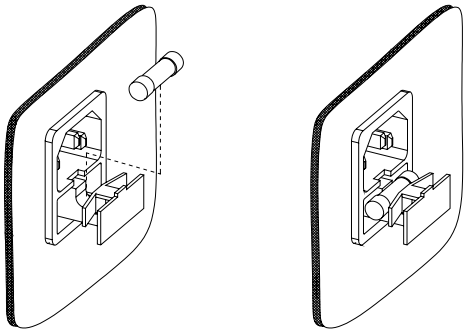


FIGURE 3 - 8
POWER ENTRY MODULE

Fuse change (see Figure 3 - 8) :

- Unplug the power supply cable
- Remove the fuse block
- Replace the fuse with the correct fuse that corresponds with the nominal voltage
- Re-install the fuse block

NOTE

Always make sure that you are using the correct fuses for your voltage selection.

SECTION 4
INTERFACE

4.1. INTRODUCTION

This section describes the signal connections for RS-232-C serial communication and the Centronics parallel connection between your PC1500 and the host computer. When connecting the unit to the host computer, always use the original CalComp cables.

NOTE

Extension cables that are too long between the host computer and the PC1500 can cause bad communication.

4.2. INTERFACE NOTES

4.2.1. SYSTEM SETUP

The SummaPaint has to be connected Parallel. The Serial connection is optional. Without serial communication it is not possible to have feedback from the unit. The serial communication parameters has to be set correctly:

4.2.1.1. MS-DOS or PC-DOS operating system

➔ To set up your serial communication, proceed as follows:

1. Boot up the operating system.

2. If the cutter is to be connected to serial port #1 (known as COM1) the port must be configured by entering the following command at the system prompt: MODE COM1:9600,N,8,2,P.

3. If the cutter is to be connected to serial port #2 (known as COM2) the port must be configured by entering the following command at the system prompt: MODE COM2:9600,N,8,2,P.

4. The computer end of the cable must be plugged into the serial port defined as COM1 (or COM2). The cutter's baud rate must be set to 9600, with parity NONE and RTS/DTR mode set to TOGGLE.

4.2.1.2. Windows 3.xx.

➔ To set up your serial communication, proceed as follows:

1. Select "Main group" in the Program Manager. Select "Control Panel', then "Ports" and then the port that is connected to the unit. Press the "Settings" Button to see the port settings.

2. The default settings of the cutter are as follow:
   - Baudrate : 9600 (see 2.2.10.)
   - Data Bits : 8
   - Parity : none (see 2.2.11.)
   - Stop Bits : 2
   - Flow Control : Hardware or Xon / Xoff

4.2.1.3. Windows 95

➔ To set up your serial communication, proceed as follows:

1. Press the "Start" Button and select "Settings", continued by "Control Panel". Press on the "System" icon and select the "Device Manager" tab. Select the port that is connected to the cutter and click on the properties button. Select the "Port Settings" tab to set the port settings.

2. Analogous to 4.2.1.2.

4.2.2. SERIAL INTERFACE CONNECTOR ON CUTTER

RS-232C Serial Interface Connector		
Pin n°	*Signal*	*Description*
1	NC	Not Connected
2	RXD	Receive Data
3	TXD	Transmit Data
4	DTR	Data Terminal Ready
5	GND	Signal ground
6	NC	Not connected
7	RTS	Request To Send
8	CTS	Clear To Send
9	NC	Not Connected

4.2.3. PARALLEL INTERFACE CONNECTOR ON CUTTER

The use of a shielded parallel cable is required.

Parrallel interface Connector			
1	-Data Strobe	19	Ground
2	Data 1	20	Ground
3	Data 2	21	Ground
4	Data 3	22	Ground
5	Data 4	23	Ground
Pin n°	Definition	Pin n°	Definition
6	Data 5	24	Ground
7	Data 6	25	Ground
8	Data 7	26	Ground
9	Data 8	27	Ground
10	-Acknowledge	28	Ground
11	Busy	29	Ground
12	Paper End	30	Ground
13	Select	31	-Input Prime
14	Not Connected	32	-Fault
15	Not Connected	33	Not Connected
16	Logical Ground	34	Not Connected
17	Chassis Ground	35	Not Connected
18	Positive 5V	36	Not Connected
-Negative true logic			

4.3. AVAILABLE SERIAL SIGNALS

If you are making your own cable, only a few of the cutter pins will actually need to be connected to the host computer. To ensure optimum results, the cable length should not exceed 4.8 m (16 feet). It should

be taken into account that your computer or cutting software may also require additional loopback connections at the host computer's end of the data cable.

- Connect the Transmit Data (TXD) pin of the computer to pin #2 of the cutter.
- Connect the Receive Data (RXD) pin of the computer to pin #3 of the cutter.
- For hardware handshaking, connect the Clear To Send (CTS) pin of the computer to pin #4 or pin #7 of the cutter. Connect the Request To Send (RTS) pin of the computer to pin #8 of the cutter.
- Connect the ground (GND) pin of the computer to pin #5 of the cutter.

APPENDIX A

MEDIA CERTIFICATION

Types of media

A wide range of media types has been evaluated and extensively tested on the SummaPaint PC1500. To ensure operation in compliance with the functional specifications of the PC1500 as listed in Section 1 of the User's Manual, only duly certified media should be used.

An alphabetic list of all duly certified media is included below. Before using other media, please contact your local CalComp representative for advice.

Cutting Media :

Manufacturer	Type
3 M	Scotchcal Series 100 Scotchcal Series 3480 Scotchcal Translucent Series 3630 Scotchcal Special Effects 210 Controltac Series 170 Controltac Series 180
APA	
ARLON	Series 2100 Series 2500
FASSON	Economy Fascal 900 High Performance Fascal 4500 Translucent Fascal 8800 Intermediate Rubyscreen
GRAFITACK	Economy 100 Series 200 - 300 Series Transparent
KAPCO	High Performance Cast Vinyl Intermediate K5000
MACTAC	MaCal 8900 MaCal 9700 MaCal 9800

MULTIFIX	Series 1000 Series 5000 Series 7000
MULTISTIQ	Series 4500 Series 4600 Series 4700
PMF	Series 500 - 600 - 700
TESA	Tesacal 4196
X-FILM	Economy

Printing Media

CALCOMP	IJM-VINYL-M IJM-VINYL-G IJP-HIGLOSS IJP-SEMIGLOSS IJM-CANVAS IJM-CLEAR IJM-BACKLITE IJP-PHOTO-PRES IJF-WHITE-OP
AVERY	IPM 1000E IPM 1020E
MACTAC	JT 1828 JT 1658
MULTIFIX	SERIE 5000
REXAM	IDEYLC160 IDPYLC160 IDEYHC160 PHGJ7 IDEVLC125r DMVLA5 IDEVLC125 IDEVHC125 IDECH500
3M	8502

APPENDIX B

MATERIAL SAFETY DATA SHEET

SHEET 1:
YELLOW AND BLACK INK CARTRIDGES

IDENTIFICATION OF THE SUBSTANCE / PREPARATION, REVISION NUMBER AND DATE

Product Name : SUMMAPAINT COLOR KITS UV-DURABLE (YELLOW AND BLACK WATER BASED INKS)
Product Code :
Revision No : A
Date : 01/97

COMPOSITION / INFORMATION ON HAZARDOUS INGREDIENTS (nl - not listed in CHIP)

Chemical Name	%	CAS Number	EEC No	Hazard Symbol	R Phrases

Contains no hazardous ingredients as defined by CHIP II regulations

HAZARDOUS IDENTIFICATION

Classification (CHIP) : None required

Main Health Hazards : None

FIRST AID

Inhalation : N/A

Skin Contact : Wash from skin using soap and water.

Eye Contact : Flush thoroughly with water. If soreness or redness persists, seek medical attention.

Ingestion: DO NOT induce vomiting, encourage casualty to drink water. Seek medical advice.

Do not use:

FIRE FIGHTING MEASURES

Flammability : Product is not flammable.

Combustion products : None known.

Extinguishing media : In the event of a fire use CO2, Foam, Dry Powder, or Vapourisng Liquid.

Do not use :

Measures :

ACCIDENTAL RELEASE MEASURE

Mop or soak up spillage's in absorbent material. Dispose of in accordance with Local Authority Regulations.

HANDLING AND STORAGE

Handling : Avoid prolonged skin contact. Wear gloves and safety glasses if splashing is likely.

Fire Prevention : Not applicable

Storage : Normal cool warehouse conditions.

EXPOSURE CONTROLS / PERSONAL PROTECTION

Respiration protection : Not essential.
Eye and Skin protection : Wear safety glasses and gloves if splashing is likely.

OCCUPATIONAL EXPOSURE LIMITS :

Substance listed in EH40/92	Long term (8 Hrs) ppm	Long term (8 Hrs) mg/m3	Short term(10 min) ppm	Short term(10 min) mg/m3

PHYSICAL AND CHEMICAL PROPERTIES

Form : Yellow or Black coloured liquid
Flashpoint : Not applicable
Vapour Pressure : 0.023 bar @ 20° C
Solubility in Water : Completely miscible in water
Autoignition Point : N/A
pH : Approx. 8
Melting Point : -3° C
Vapour Density :
Density : Approx. 1.01
Explosive Limits: N/A

STABILITY AND REACTIVITY

Chemical reactivity : None

decomposition products : None

Materials / conditions to avoid : None

TOXICOLOGICAL INFORMATION

ECOLOGICAL INFORMATION

DISPOSAL CONSIDARATIONS

Consult Local Authority for regulations regarding waste disposal

TRANSPORT REGULATIONS

Proper shipping name : Not applicable
UN Number : Not applicable
IMDG code : Not applicable
ICAO/IATA class : Not applicable
Marine pollutant :

Packing group : Not applicable
IMDG class : Not applicable
RID / ADR : Not applicable
Hazard warning sign : Not applicable

REGULATORY INFORMATION

CHIP labelling - Symbol : none Hazard : None Contains :

Other suggested labelling : None

AND REACTIVITY

Chemical reactivity : None

decomposition products : None

Materials / conditions to avoid : None

OTHER INFORMATION

THIS SAFETY DATA SHEET HAS been updated to comply with CHIP regulations.

SHEET 2:
CYAN AND MAGENTA INK CARTRIDGES

IDENTIFICATION OF THE SUBSTANCE / PREPARATION, REVISION NUMBER AND DATE

Product Name : SUMMAPAINT COLOR KITS UV-DURABLE (CYAN AND MAGENTA WATER BASED INKS)
Product Code :
Revision No : A
Date : 01/97

COMPOSITION / INFORMATION ON HAZARDOUS INGREDIENTS (nl - not listed in CHIP)

Chemical Name	%	CAS Number	EEC No	Hazard Symbol	R Phrases
Isopropyl Alcohol	< 3	67-30-0	200-661-7	Flame/ St Andrews Cross	R11
n-Methyl-2-Pyrrolidone	< 4	872-50-4	212-828-1	St Andrews Cross	R36/38

R11 = Highly flammable; R36/38 = Urritating the eyes and skin

HAZARDOUS IDENTIFICATION

Classification (CHIP) : None required

Main Health Hazards : None

FIRST AID

Inhalation : N/A

Skin Contact : Wash from skin using soap and water.

Eye Contact : Flush thoroughly with water. If soreness or redness persists, seek medical attention.

Ingestion: DO NOT induce vomiting, encourage casualty to drink water. Seek medical advice.

Do not use:

FIRE FIGHTING MEASURES

Flammability : Product is not flammable.

Combustion products : None known.

Extinguishing media : In the event of a fire use CO2, Foam, Dry Powder, or Vapourisng Liquid.

Do not use :

Measures :

ACCIDENTAL RELEASE MEASURE

Mop or soak up spillage's in absorbent material. Dispose of in accordance with Local Authority Regulations.

HANDLING AND STORAGE

Handling : Avoid prolonged skin contact. Wear gloves and safety glasses if splashing is likely.

Fire Prevention : Not applicable

Storage : Normal cool warehouse conditions.

EXPOSURE CONTROLS / PERSONAL PROTECTION

Respiration protection : Not essential.
Eye and Skin protection : Wear safety glasses and gloves if splashing is likely.

OCCUPATIONAL EXPOSURE LIMITS :

Substance listed in EH40/92	Long term (8 Hrs) ppm	Long term (8 Hrs) mg/m3	Short term(10 min) ppm	Short term(10 min) mg/m3
Isopropyl Alcohol	400	980	550	1225
n-Methyl-2-Pyrrolidone	100 (estimated)			

PHYSICAL AND CHEMICAL PROPERTIES

Form : Yellow or Black coloured liquid
Flashpoint : Not applicable
Vapour Pressure : 0.023 bar @ 20° C
Solubility in Water : Completely miscible in water
Autoignition Point : N/A
pH : Approx. 8
Melting Point : -3° C
Vapour Density :
Density : Approx. 1.01
Explosive Limits: N/A

STABILITY AND REACTIVITY

Chemical reactivity : None

decomposition products : None

Materials / conditions to avoid : None

TOXICOLOGICAL INFORMATION

ECOLOGICAL INFORMATION

DISPOSAL CONSIDARATIONS

Consult Local Authority for regulations regarding waste disposal

TRANSPORT REGULATIONS

Proper shipping name : Not applicable
UN Number : Not applicable
IMDG code : Not applicable
ICAO/IATA class : Not applicable
Marine pollutant :
Packing group : Not applicable
IMDG class : Not applicable
RID / ADR : Not applicable
Hazard warning sign : Not applicable

REGULATORY INFORMATION

CHIP labelling - Symbol : none Hazard : None Contains :

Other suggested labelling : None

AND REACTIVITY

Chemical reactivity : None

decomposition products : None

Materials / conditions to avoid : None

OTHER INFORMATION

This safety data sheet has been updated to comply with CHIP regulations.

CALCOMP ADDRESSES

CalComp Display Products N.V.
Rochesterlaan 6
B-8470 Gistel
Belgium

CalComp
Mail stop 69
2411 West La Palma Avenue
Anaheim, CA 92801
U.S.A.

CalComp
Contracts Department
Mail stop 12
2411 West La Palma Avenue
Anaheim, CA 92801
U.S.A.